

**Interview with Marc Hauser conducted by Jim Spadaccini at The Future of Science Conference in Venice, Italy
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Q: You've written that the human sense of right and wrong has evolved. If we have a moral instinct, why did it evolve? What are the advantages?

MARC HAUSER: So the question of why a moral instinct evolved is... can be thought about in two different ways. There's sort of the why of what would the evolutionary advantage be of a moral instinct, and then there's the question of why in terms of sort of just the mechanisms of how it actually gets worked out in the brain.

The why on the evolutionary side, I think we're left with sort of stories at some level, but if you think about what we know about non-human primates, our evolutionary ancestors in some sense, what you can see are there are various kinds of social rules that help cohere cooperation and reduce severe violence within a social group. So non-human primates, monkeys and apes, as well as many other species have dominance hierarchies, and dominance hierarchies serve to give structure to social relationships, so that there is less ambiguity than there might be if there were no hierarchy. So if I know that Animal A is higher-ranking than me, then when I see food I know fairly well that A will take the food if he's interested and I will not be able to take it. So it serves a cooperative kind of glue for any kind of society, and animals at some level seem to respect those hierarchies.

Now, of course, just like in human societies, dominance hierarchies often shuffled, as B decides 'I don't like that A is higher-ranking than me,' forms a coalition with C because B and C together are much better than B alone, and B and C together overthrow A, A goes below C, and now B and C are numbers 1 and 2. So it's not like these hierarchies or these social norms reduce any kind of conflict, in general, but they do give some sense of stability to the group.

So I think that's one evolutionary story, which is at least consistent with what we see in animal societies, that various kinds of social norms help cohere cooperation and reduce violence.

Q: But there is a difference between a social hierarchy and morality. Right?

HAUSER: Well, the claim that I want to make is that much of the moral

judgments that we make are actually completely unconscious, and that consciousness, in some sense, may be part of an illusion we are confronted with a situation that's moral in some way, about harming or helping somebody, and unconsciously and intuitively we generate a judgment about what's right or wrong. And then we try to reconstruct because we always want to justify our actions, but the actual judgment may have come about through completely unconscious and intuitive processes.

And, I mean, here's sort of an analogy, I think, to make the unconscious part salient. Although it's true that in grammar school you learned about the structure of a sentence, about nouns and verbs and adjectives and how to conjugate. If you actually thought about what you learned in grammar every time you spoke, you would get nowhere—right?—because you would have to think, 'Well, I need a noun now, and now you need an adjective and...' you're not going to say anything. I mean, the same thing is absolutely true when it comes to the moral sphere. If we actually had to call up all the principles, consciously, all the time, to make a decision, we probably wouldn't act very much at all.

So I think a lot of the processing is intuitive, unconscious, and the stronger part of the argument that we want to make is that it's not simply unconscious in the sense that our school grammar is unconscious, in other words, something we once learned but now has become habitual, but rather, unconscious in a completely impenetrable way, like the sort of the formal rules in linguistics that define what becomes a grammatical sentence or not.

Q: So the ramifications here are enormous, for parenting, school, religion. Isn't that where most people think they get their sense of right and wrong from?

HAUSER: Yeah, I think the parallels are nice... so I'll just tell you a nice story. I... my wife and I adopted a little girl from Russia several years ago, who came to us at the age of 2, so she was already speaking Russian. And in Massachusetts, the state recommends taking a social worker on who will help you with a child adjustment, and we were totally fine with that. So the social worker, after meeting with our daughter for awhile said, 'Your daughter is language-delayed.' And I said, 'Well, what do you mean by language-delayed.' She said, 'Well, you know, she's not really speaking English yet.' And I said, 'But she's just come to the United States like three weeks ago, and she's speaking Russian.' And she said, 'Well, don't worry, you know, we can teach her language.' And I think that's the sort of the same problem, that people think that they're teaching their kids language, but they're not because kids are operating on this completely unconscious, intuitive way, and they're growing language the way they're growing their arms, in some sense. That doesn't mean that the parents aren't giving content to what's going on. I mean, the child is not born

with the word ‘toaster’ in its head, and nor is the child born with a rule that’s explicit that says, ‘Don’t kill people of age X who have a certain color, and so forth.’

So there are generic principles or computations in the language of science that structure the learning process, and so in the same way that when the child says, ‘I wented to the market,’ and the parent says, ‘No, you went to the market,’ and they go, ‘I wented to the market’ very happily, is the same sense in which when a child does something, the corrections are going to have very little effect at some level. The kid is hypothesis-testing all the time in the moral domain the way they’re testing in the language domain.

Q: You’ve spent a lot of time studying animals. In terms of “mental toolkits” what are a few things we have in common? What are some of the most striking differences?

HAUSER: So if we think about sort of similarities and differences between animals and... human animals and non-human animals, this is one of those dangerous questions where every time I answer it, then a year later there’s already a new result and I have to throw away the previous theory. That’s, I guess, sort of the fun of it. So right now, what I would say are some of the striking differences, and then we’ll come to the similarities, are that animals seem to, for example, have rich conceptual sort of aspects of the mind that represent the world. So you find animals with all sorts of social strategizing, high-ranking/low-ranking, kin/non-kin, more/less—very rich conceptual systems. And yet if you look at their own communication, you find a complete mismatch. They are simply not representing in their communication the richness that they have in their heads. The analogy I like to make is it’s somewhat like Franz Kafka’s *Metamorphosis*, it’s Gregor Samsa in a beetle outfit—rich thoughts about the world, but no way of getting it out. So one of the things, I think, that’s very, very different is that animals have rich representations of their world without a connection in the head and the mouth, or the hands, for getting that information out. That has huge ramifications. It means that, for example, chimpanzees, who have what’s called a fission/fusion society, where small numbers of animals will come together for a short period of time, then disband, then meet up with another group and disband, and then meet up with that first group, perhaps. Well, in that intervening period they have no way of knowing what those guys did, because there’s no way of telling them. They can maybe sense a tension in their body, but the content of that tension is completely opaque to them. So that’s one, I think, tremendous difference, and I think there are lots of things that go into getting the inside out to the outside.

A second thing, which has to do with cooperation—here we can speak about similarities and differences. Lots of animals cooperate—ants, fish, frogs, birds,

primates. But in a certain flavor of cooperation, reciprocity, which seems at this point in time maybe to be uniquely human. If it happens in animals, it happens rarely. And when I mean reciprocity, what I mean is reciprocating altruistic acts with genetically unrelated individuals, because what biology did many, many years ago was solve a problem of altruistic behavior, in general, by arguing that if two animals are genetically related it's okay to incur the cost to self if the benefit is to those who are genetically related. The real challenge comes in how do you get altruistic behavior to evolve when the two individuals are not genetically related? And in humans, we've seemed to have solved that problem through reciprocation. So I say to you, 'I will give you \$5 on a loan today, with the expectation that you'll give me the money back in the future.' That is the kind of cooperative interaction which seems to be either not present at all in animals or truly negligible. And that raises all sorts of interesting questions about the mechanisms in the brain and the psychology that you would need to support reciprocity, things like the social emotions, guilt. If I give to you and then you don't give back to me, hopefully, if you're normal, you'll feel guilty, and guilt will then fuel the next round of reciprocations. So that's just sort of a class of things.

There are other ways in which the formalizations of language, in terms of symbols and so forth, has immense ramifications for all aspects of our life. If one animal wants to give information about the location of food, they can certainly lead the animal there, but I can just give you a map, or I can tell you, 'Take a right here, two lefts there, and a right, and you'll be there.' I mean, we're done. That's a way in which the externalization of our concepts becomes extremely powerful in all walks of life.

Q: If our moral instinct, and guilt along with it, are inherited, do you foresee a way in the future to pinpoint that this gene does this, or this gene does that?

HAUSER: When people make an argument about the role of biology in a particular psychological phenomenon, like morality or language or these very complicated phenomenon, there... I think there are several steps that need to be taken along the way before we can even get to the genetic level. The first is to break down these complicated phenomena in terms of component pieces that we can ask about. So, for example, when you say, 'What's entailed in moral judgments?' Well, there are a million things involved in moral judgments. So the way we begin to think about it is to decompose a system into things like, 'Well, if you're a moral agent, you need to distinguish between an intentional action and an accidental one.' So I take a rock and I throw it at you, and it hits you in the face and it hurts you. That's not okay, morally. I have a rock in my hand, I trip, and the rock goes off and hits you in the face, the consequences are identical, but from the perceiver's perspective I didn't do anything morally wrong, unless I

was negligible, like I saw the banana peel on the floor, and I knew I was going to hit it and I still went ahead and tripped. That's negligence. So there's a whole layer of psychological distinctions there that go to evaluating consequences that depend upon the means, depend upon the path to the consequences.

So here is where we can ask, for example, an evolutionary, comparative question. We can say, 'Do animals distinguish between consequences that are accidentally-driven versus intentional?' And we're beginning to get answers that the answer is yes. Now, that doesn't make them moral creatures, but it means they have some of the building blocks that would be necessary for becoming one.

Once you begin to find systematic similarities and differences in those components, then genomic analyses between these species can begin to refine how we understand the genetics of those processes. Now, that's a long way away. I mean, people have made a big deal about the Fox-P2 gene, and its relationship to language, but what's often forgotten in that discussion is that the Fox-P2 gene is linked not just specifically to language, but all sorts of patterns of motor operation in the face. It's not specific to language, but it has effects on language. So we're very far away from that. But I think, to me, the combination of rich behavioral descriptions of both humans and non-human animals, as well as developmental cases, studies of brain damage and studies using brain imaging, and genomic analyses, that combination is going to begin to allow us to refine our understanding.

Q: Are we still evolving? If so, is our moral instinct evolving as well?

HAUSER: I think... yeah, the question of whether we're evolving and whether our moral instinct is evolving is a... is a good one. I mean, I think, for most people in biology, which I take myself to be a part of, think of evolution, biological evolution as genetic... change in genetic frequencies. And there it's... I think it's an open question. Time is so little that we don't have, necessarily, the genetic analyses. But here's something that's kind of intriguing: If you look at the explosion in brain size in our... in our evolutionary past, you see this period of rapid acceleration in the... you know, over a period of about a million years, where it really goes up exponentially. But in the last 10,000 years, it's actually been going down, and this biological evolution. This is not cultural evolution. Now, some people will argue that that's because there's been selection on smaller brain size, but it also could be selection on smaller body size, which then gives us the sense of a bigger... a smaller brain. Okay? So the question is, is the difference in brain size due to selection on the brain, as opposed to selection on the body, or, of course, both? So it's not clear what's happening in terms of our biological evolution, but there's no reason to suspect that there isn't change biologically in aspects of human biology—brain, genes, and so forth.

The notion of changing moral sensibilities, I think, here is where I really would like to appeal to an idea that the philosopher, Peter Singer, has pushed, which I like a lot, which is what he calls the 'expanding moral circle.' This is not argument for a genetic change in our moral sensibilities, but, rather, that we have had and we still have intuitions about what's right or wrong, but what's very important about humans as a species is that we can reflect upon those intuitions, and depending upon a good argument change what we think is morally permissible or not.

So here is a very nice example, one in which Peter Singer played an important role. Fifty years ago, there were no laws against doing whatever you wanted to animals—you could torture them, you could use them for any kind of medical research, without any constraints at all. Here we are today, 2006—there are very serious constraints on what you can do with animals, of a wide variety. And the range of animals that get included in that sphere changes almost every year. So in the early days, well, you couldn't operate on a chimpanzee, but a pigeon, whatever. Right? But, nowadays, animals, like birds and rodents and all sorts of organisms are included in a protective mechanism, such that if you are going to do biomedical research there are certain regulations. So we may still instinctively say, 'Well, if had to kill my dog versus my daughter, there's no question who I'm going to for,' that's fine, but we have now included in our moral sphere animals as being protected, in the same way that we used to have slavery in certain countries, and that's no longer, banned, the same way that we protect against sexism and then racism, that's a way in which in our conscientious, reflective capacities can look in on what may be intuitions going the opposite direction, and change things about what we ought to do.

Q: Some think we're not evolving anymore, that natural selection requires isolation. You don't share that view?

HAUSER: Yeah, I would disagree 100%. I mean, you know, that would mean that there is no genetic variation in our population, and we know that's 100% false. I mean, for example, one of the very controversial ethical issues right now with the Human Genome Project is that we know that certain ethnic/racial groups are more vulnerable to certain kinds of diseases than others. The reason why that's so ethically hot is because once that becomes... releases information, you have all sorts of reasons why you could target groups as being non-insurable. Okay? 'You as a group are vulnerable to disease X, therefore, you're a risk. I don't want to insure you.' So it opens up the door to a lot of sort of Pandora Box type of questions that people just don't want to address, and I think for the right reasons, in some sense that they're very, very hot. But the point remains that that variation is there. That's the kind of variation that selection could operate on. We know that certain groups die at an earlier age than other groups. That

selection is operating today. Right?

Now, medical intervention can help with those kinds of things, so that's the good side of humanity. Right? We can say, 'Here is a group of people that are more vulnerable to certain kind of diseases. Let's figure out a way in early development that we can block that, protect against that.' Right? But those are really tough questions, because you're now saying, 'How do we intervene on the biology? What becomes a reasonable intervention?'

So take something like autism. This is a developmental disorder, which clearly has genetic ramifi... implica... sort of foundations because we know much more common in boys than girls. Some people claim an eightfold difference. There is a genetic difference—much more vulnerability. Well, if we understand the genetics of autism, shouldn't a parent be able to go in and say, 'If I could delete that problem in utero and stop autism, the child develops and has a much more social life.' Should a parent be able to do that?

Q: But isn't that us getting involved the evolutionary process?

HAUSER: Well, the evolutionary process is happening. Something like Downs Syndrome—I mean, those people have a much shorter half-life. So independent of our intervention, selection is working on those disorders, it absolutely is. And any disorder that you can think about that has that kind of implications for survivorship, it is operating. The question is now what can humans do to intervene, and will humans allow that kind of intervention? I mean, the hard thing in these cases is it becomes a complete slippery slope. If I find out that I've got the genetics for brown eyes... you know, actually I'd rather have blue eyes. Well, can I intervene on my child and say I want them to have blue eyes because blue eyes are more attractive? So the slippery slope moves very quickly here, and the question is going to become: As we the species are confronted with the capacity to intervene, when do we allow it? When do we stop it?

Q: Let's talk about evolution in the United States. If you don't accept evolution, how can you learn biology? Or genetics? How do you see the issue of evolution and education?

HAUSER: I mean, there are sort of multiple questions about how we should... so how Americans, as a population, should think about the teaching of evolution. I mean, the first thing is that I never kind of liked even the question, or the statement that some people just don't believe in evolution. I mean, as a science, there really isn't a kind of a belief or a non-belief. There's what the facts are and what you agree or disagree with the nature of the facts. You know, that there is change is undebateable, nobody is going to deny that. The question is what the

source of that change is. And so for some it's going to be God or some divine power is responsible for the change. At that point in time, science and religion has very little to say to each other because you've got one source of change and you've got another source. If the view of it being God or some divine power is having the causal effect, then there's just nowhere else to go there.

So that's a kind of stalemate. And the question is, you know, are there any places else to move? And so here it seems to me what I... what I want to appeal to and what I try to appeal to in an essay that I wrote for an edited volume called *Intelligent Thought*, is to appeal to parents with children, which I have two. And my appeal goes something like this: As educators, it seems to me that we have a responsibility to do two things. One, is to give information about certain disciplines that falls clearly within the disciplinary boundaries that says, 'What is this discipline about? What are the questions it asks? What are its assumptions? What constitutes a result?' Now, said like that, generically, that's true of art, it's true of philosophy, it's true of economics, and it's true of any of the sciences. So I want my child to go into a class on religion and learn about religion, and learn about the kinds of texts that have been written, learn about the kind of scripture, learn about the kinds of belief systems. But what I would want is for them to then say, 'Oh, but science is another kind of religion or it's another kind of way of knowing,' without actually going into the details of the science. There could be a course about the conflict between science and religion. That's fine, as long as we're clear about what those areas/disciplines are asking. So in the same way that when my child goes and takes a course of evolutionary biology, I want my daughter to learn what are the questions in evolutionary biology. We're interested in life. We're interested in scientific evidence as evidence.

So what to me, as a scientist, annoys me about the introduction of supernatural as evidence is that that's just not playing what we think of as our discipline. What you could say is, 'Let's have a seminar on the nature of any kind of evidence.' That would be interesting, and that should be taught because it's very interesting. But I think what's gotten blurred to me, and this is why I think the United States is in a very bad state on education is that it's blurring disciplines. I don't think any parent wants this. They want their child to have clear views about what science does, as opposed to non-science. And then they want courses where the sciences in other areas come together. What can they solve? What can't they solve?

So here's a perfect example with respect to morality. All that I want to cover as a scientist about morality is a description of how people go about making judgments. What science and me as a scientist will never do is say, 'Look, your brain tends to think of actions as worse than omissions, so you should do this.' That claim will never come from my mouth because I am not in a position to

prescribe what people should do. That's a different issue. That's where you think about what religious scripture will prescribe for people of that religious group. That's where you think about, 'I'm a Democrat. You're a Republican. We have different prescriptions about what our politics will tell us to do.' That's a whole different layer, and that's where the scientists should be clear. They never should be prescribing.