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Digging into our consciousness

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Dr. Antonio Damasio, a neuroscientist and director of the Brain and Creativity Institute at the University of Southern California, is best known for his pioneering work on how the brain generates emotion and how emotion, in turn, helps people make decisions. His books "Descartes' Error" and "Looking for Spinoza" were international bestsellers. His latest work, "Self Comes to Mind," extends his theories and adds new facts to the ever-vexing question of consciousness - what it is, why it evolved and how it contributes to human culture.

Damasio discussed these ideas with the Los Angeles Times.

Q: What is consciousness?

A: It's this ability that we have to look out on the world and grasp it. It is a way evolution found to increase our effectiveness in dealing with life and its struggles.

Q: You write that consciousness arises out of a sense of self - and that animals, too, have a basic sense of self.

A: Yes. Imagine, for example, birds. When they look out at the world, they have a sense that they are alive. If they are in pain, they can do something about it. If they have hunger or thirst, they can satisfy that. It's this basic feeling that there is life ticking away inside of you.

Q: What is the root of consciousness?

A: One of the things that is most important in this field is to understand the relationship between the mind and an organism. There is no such thing as a disembodied mind. The mind is implanted in the brain, and the brain is implanted in the body.

Most of the attention has been given to the cerebral cortex. Even I, when I started, always gave the lion's share to the cerebral cortex. Through the years, I've become convinced that if there's a lion's share to be given in terms of the origins of consciousness, it has to go to the brain stem, which regulates our basic bodily functions and is really the hinge point between the body and the rest of the brain.

Q: How did consciousness start in the brain stem?

A: A living system has to cope with many problems. It has to search for sources of energy, incorporate them and transform them. The system also needs to defend itself. This poses a big management problem for an organism, because it needs to "know" when it needs more energy, and when to defend itself. It sounds like a simple problem, but it's very complicated. Nature has solved it for millions of years by focusing on such resources as states of hunger, states of thirst, defense mechanisms and so on.

The essentials of that machinery of regulation exist in biological systems, even if they don't have a brain. But as the systems and environments become more complicated, brains develop to cope with the added complexity. Eventually, mind and consciousness develop from those brains and they come in handy. They give them a way of applying the best among several possible strategies.

Q: What particular aspects of consciousness contribute to survival?

A: Having a self, even a simple self, allows you to look into the world

and put a mark over what is more important and less important. It's a way of classifying the world in terms of your own needs. That has been the big triumph of consciousness, and is probably the reason why it got into more and more elaborate forms.

Q: What are some advances in science that have made it possible to study consciousness?

A: One very important one is advances in imaging. We use what is known as functional magnetic resonance imaging. By tracking the amount of blood flow into a certain area, it gives you an idea whether a particular part of the brain - or several parts of the brain - are more active or less active. That allows you to test how the system is operating. That has been extremely important.

Q: What kinds of things have you learned this way?

A: One recent study at the institute has to do with understanding compassion. We compared what was going on in the brains of normal individuals when they were experiencing compassion for someone who had a physical predicament - for example, someone breaking a bone - or someone who had a mental predicament, such as being very sad about the loss of a friend. We had film clips that told stories about these different conditions.

When people were placed in the scanners and looked at the stories, there were certain parts of the brain that were very active and others that were not active at all. Anything that had to do with the body activated parts of the brain that had a lot to do with body regulation. When people were very concerned about mental pain, those parts were not active.

When you deal with something like compassion for physical pain, which we know is very, very old in evolution - we can find evidence for it in

nonhuman species - the brain processes it at a faster speed. Compassion for mental pain took many seconds longer. Which, of course, stands to reason, because you need to think through things in order to understand the situation and create the stimulus to engender your emotion.

Q: In "Self Comes to Mind," you say that society and culture are outgrowths of human evolution. Can you explain that?

A: Homeostasis is the whole collection of systems and strategies which allow a living organism to regulate life to its best advantage. By and large, even though humans are very complicated, if you leave things alone you'll be fine; if you respond to the commands homeostasis is giving you, you will be able to stay in check.

However, because the world we live in is so complex, you need to introduce another layer of regulation. That's what social networks and culture provide. And the beautiful thing is that this socio-cultural homeostasis has exactly the same role as basic homeostasis: regulating life so we can survive, and do so with a modicum of well-being. That's why, for example, people have managed throughout history to be under despotic regimes and emerge on the other side with better regimes. That's happening right now, even as we speak.

Q: This doesn't work all the time - sometimes organisms die, and species go extinct.

A: Exactly. But certainly the more aware we are of the predicaments we're in, the less likely it is that the bad stuff will prevail.