Group FIVE Martin Monti

Martin Monti was born in 1978. He's professor in psychology and neurosurgery department at University of California Los Angeles. In 2002 he graduated at University “L. Bocconi” in Milan and between 2007 and 2010 he has been a researcher at the “Medical Research Council Cognition and Brain Sciences Unit, in Cambridge.
Currently he studies the relation between language and thinking and he also researches about coma and other aspects of the cognitive system such as music, arithmetic and logic.

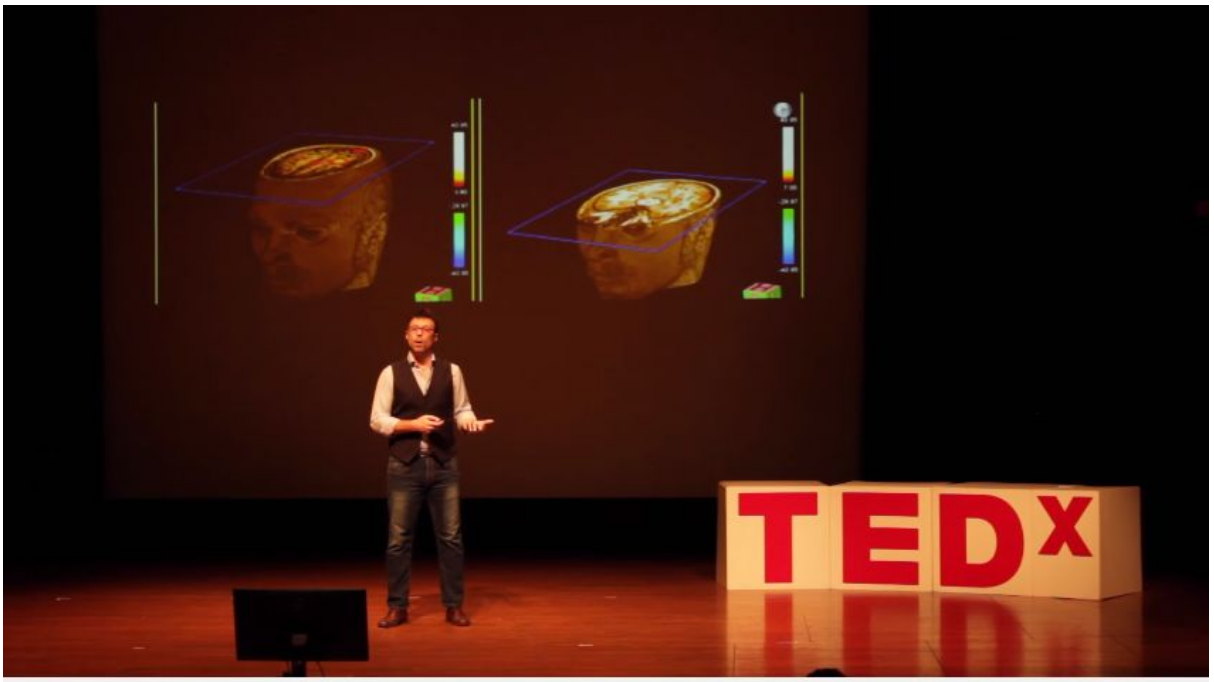
1. Why have you decided to study neuroscience after graduating in economics?
My interest in economics was primarily about how individuals make choices. Much of this work reduces individuals to equations and systems of equations. After a few years doing this I realized that these equations didn't (and couldn't) fully capture how individuals make choices, so I decided that to truly understand how people think I had to understand the brain. For this reason I chose to pursue graduate studies in neurosciences.

2. Are you studying some methods to bring people out of the coma? If yes can you explain us these methods?

Yes. In the past 10 years we have found that there is a very special part of the brain -- two little egg-shaped structures in the middle of the brain known as the thalami -- important for helping the brain maintain a state of consciousness. These parts of the brain are known to be less active in patients in a coma and a disorder of consciousness (like the vegetative state and a minimally conscious state) so we invented a new way of trying to stimulate these regions to be more active. The technology is based on ultrasounds, and is known as Low Intensity Focused Ultrasounds. The difference with conventional ultrasound is that we focus sonic energy in a specific part of the brain (the thalamus), effectively "injecting" energy to try to stimulate it.

3. What happens to someone who falls in coma?
In some respects this is still a mystery. One popular theory is that after a severe brain injury the brain is no longer able to maintain its ability to integrate information and this deletes the feeling of consciousness. It is possible that a principal reason for this (though not the only one) is that the thalami are no longer able to function properly due to the severe brain injury.

4. Why did you study the relation between language and thinking?
If you spoke a different language, would you think differently than how you think now? If someone never learned to speak any language, or if they lost language after a brain injury, would the world look different to them, would their thoughts be different from yours and mine? These are the questions I ask when I work on the relationship between language and thought. (Currently my answer is "no"!)



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5. Why did you choose to go to University L.Bocconi?
I always knew I wanted to be a scientist, but it took me some time to understand in which discipline I wanted to specialized. At the time I was interested in how people take decisions so economics felt like a god choice. And it was: it taught me a lot of mathematics and statistics and made me realize what I really wanted to study was the human brain!

6. Did you take part in the ISEULT project, the construction of the 11.7 T MRI Scanner ? Do you think this machine will improve researches about coma?
I did not, but I think it is an extremely exciting project and technology. And yes, I'm sure that a stronger MRI machine will give us greater detail in studying the brain, particularly in coma patients.

7. What do you like most in your job and why ?
I like the intellectual freedom to chase ideas, to try to understand the world through the human mind. It is at times frustrating (in science we are often wrong!), but when we suddenly realize that something we thought correct was in fact wrong and that there is a better explanation -- well that is a wonderful feeling. I also very much enjoy teaching and training my students to be good scientists!

8. Do you have some advice for a student who wants to work in Neurosurgery/Neuroscience later?

Yes: above all, be passionate and open to new ideas and new thoughts. There is little that is more exciting than finding out some theory was completely wrong and seeing the world in light of a new and better theory. Suddenly everything is different, things make more sense than before, and we are one step closer on the journey towards knowledge. It's a wonderful journey, full of surprises and realizations -- so do not let any idea be "too big" to be challenged and changed.

9. How difficult were your studies?
When I study something I do not like I find it very difficult, so the secret is to find what you like, then -- although it still takes a lot of time and dedication -- studying becomes much easier and a fun discovery instead of a boring memorization of notions written in a book! I remember well when I studied for my first exam in neurosciences, I could not stop reading the book, everything was just so interesting (unlike, for example, the accounting exams I had taken in economics which to me were not very exciting!)

10. Three words that represent Science to you.
Adventure, ideas, and rigor.

Brain Function and Responsiveness in Disorders of Consciousness

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