LEGGERE TUTTO E TRADURRE SOLO LE FRASI NON SOTTOLINEATE

OP-ED COLUMNIST

Beyond the Brain

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Published: June 17, 2013 New York Times

It's a pattern as old as time. Somebody makes an important scientific breakthrough, which explains a piece of the world. But then people get caught up in the excitement of this breakthrough and try to use it to explain everything.

This is what's happening right now with neuroscience. The field is obviously incredibly important and exciting. From personal experience, I can tell you that you get solution to understanding all thought and behavior.

This is happening at two levels. At the lowbrow level, there are the conference circuit neuro-mappers. These are people who take pretty brain-scan images and claim they can use them to predict what product somebody will buy, what party they will vote for, whether they are lying or not or whether a criminal should be held responsible for his crime.

At the highbrow end, there are scholars and theorists that some have called the "nothing buttists." Human beings are nothing but neurons, they assert. Once we understand the brain well enough, we will be able to understand behavior. We will see the chain of physical causations that determine actions. We will see that many behaviors like addiction are nothing more than brain diseases. We will see that people don't really possess free will; their actions are caused by material processes emerging directly out of nature. Neuroscience will replace psychology and other fields as the way to understand action.

These two forms of extremism are refuted by the same reality. The brain is not the mind. It is probably impossible to look at a map of brain activity and predict or even understand the emotions, reactions, hopes and desires of the mind.

The first basic problem is that regions of the brain handle a wide variety of different tasks. As Sally Satel and Scott O. Lilienfeld explained in their compelling and highly readable book, "Brainwashed: The Seductive Appeal of Mindless Neuroscience," you put somebody in an fMRI machine and see that the amygdala or the insula lights up during certain activities. But the amygdala lights up during fear, happiness, novelty, anger or sexual arousal (at least in women). The insula plays a role in processing trust, insight, empathy, aversion and disbelief. So what are you really looking at?

Then there is the problem that one activity is usually distributed over many different places in the brain. In his book, “Brain Imaging,” the Yale biophysicist Robert Shulman notes that we have this useful concept, “working memory,” but the activity described by this concept is widely distributed across at least 30 regions of the brain. Furthermore, there appears to be no dispersed pattern of activation that we can look at and say, “That person is experiencing hatred.”

Then there is the problem that one action can arise out of many different brain states and the same event can trigger many different brain reactions. As the eminent psychologist Jerome Kagan has argued, you may order the same salad, but your brain activity will look different, depending on whether you are drunk or sober, alert or tired.

Then, as Kagan also notes, there is the problem of meaning. A glass of water may be more meaningful to you when you are dying of thirst than when you are not. Your lover means more than your friend. It’s as hard to study neurons and understand the flavors of meaning as it is to study Shakespeare’s spelling and understand the passions aroused by Macbeth.

Finally, there is the problem of agency, the problem that bedevils all methods that mimic physics to predict human behavior. People are smokers one day but quit the next. People can change their brains in unique and unpredictable ways by shifting the patterns of their attention.

What Satel and Lilienfeld call “neurocentrism” is an effort to take the indeterminacy of life and reduce it to measurable, scientific categories.

Right now we are compelled to rely on different disciplines to try to understand behavior on multiple levels, with inherent tensions between them. Some people want to reduce that ambiguity by making one discipline all-explaining. They want to eliminate the confusing ambiguity of human freedom by reducing everything to material determinism.

But that is the form of intellectual utopianism that always leads to error. An important task these days is to harvest the exciting gains made by science and data while understanding the limits of science and data. The next time somebody tells you what a brain scan says, be a little skeptical. The brain is not the mind.