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"Our minds are made for perceiving things in the near environment"

Trained as a philosopher but with strong interests in the history of science, Thomas Sturm is a specialist in the field of modern philosophy and the relations between history and philosophy of science, with a particular emphasis on the analysis of psychological research. Since 2005, he is a research scholar at the Max Planck Institute for the History of Science in Berlin, where he has been working on a project entitled "Perceptual Illusions in the Dynamics of Psychological Research". Sturm visited the UAB Center for the History of Science (CEHIC), where he led a seminar on perceptive illusions and relations between psychology and epistemology.

Thomas Sturm is a research scholar at the Max Planck Institute for the History of Science, in Berlin. He helds a PhD in Philosophy from the University of Marburg (2007), and he is a specialist in the work of Kant y Kuhn. Over the last years, he has undertaken research mainly in the field of history of science and the way in which it can help to understand some of the relations between Philosophy and Psychology. Modern recent philosophy, as well as the work of Kant and the relations between Philosophy and the History of Science are among his main interests of research.

Sturm won the North American Kant Society (NAKS) Essay Contest in 1999, and he has been rewarded with other prizes as the 2004 Early Career Award from the European Society for the History of the Human Sciences (ESHHS)/Journal for the History of the Behavioral Sciences (JHBS).

I think I'm going to start this conversation by asking: "Am I really seeing you?"

(Laughs) Yes, I believe you are.

But… how can you be sure?

This is one of the traditional problems of philosophy, and the Argument from Illusion -which is also at the root of the question - has even led to extremely skeptical positions according to which we will never know physical reality. And that leaves you with two possibilities: either you have no knowledge of physical reality at all, or you must have other sources of knowledge besides perception and observation.
Even Descartes in his first Meditation, his most famous work, used something like the Argument from Perceptual Illusion in order to reflect whether one knows anything at all. He realized that the Argument from Illusion does not actually go very far. You need to make much stronger assumptions to become truly skeptical about the external or physical world. Because, for instance, false judgments caused by perceptual illusions of the different senses may be corrected in various ways. I do not see the table here as a rectangle, but I can come to know that it is rectangular if I use different senses like my simple touch, or if I walk around it. There are other options. I can measure things out. Then the Argument from Illusion cannot suffice to establish that there is no external world, or that we cannot have knowledge about the external world. But I myself am not worried much about whether or not it could threaten our ordinary assumption that there is a mind-independent external world.

What are you interested in?

I'm interested generally in epistemological problems and in how empirical science can profit from philosophical epistemology, but also how philosophical epistemology can be improved by thinking about the sciences and their history. There is no easy way - as some more naïve defenders of a naturalistic approach in epistemology think - for us to replace epistemology by cognitive psychology, or to base all epistemology upon psychology. I don't think that can ever be reached. On the other hand, ignoring what empirical science does – and particularly what cognitive science and psychology does - in the field of perception and cognition would be a serious error for any current epistemologist.

How do perceptual illusions relate to this integration of fields?

Philosophers are interested in perceptual illusions because of this so-called Argument from Illusion, which leads to the conclusion that we do not perceive physical reality directly. Scientists are interested in perceptual illusions for other reasons. Science -at least empirical science- requires observation and experiment, and there is no observation and experiment without perceiving something. And there are various kinds of ways in which perceptions may go wrong. Illusions are a standard case.
The project I'm presenting today is about the history of perceptual research and, more specifically, the history of research of perceptual illusions. This research goes back to antiquity, but it has become particularly interesting or particularly strong since the 19th century, when psychology became a laboratory science.

The way in which I am integrating philosophy and history of science is by asking what are the conceptual and methodological problems that psychologists have found in research on perceptual illusions. And there are, in some cases, particularly stubborn problems, problems that can't be resolved by the ongoing empirical research alone. One example is the ancient moon illusion.

Why is this problem so big?

Originally it was a problem for astronomers. They observed first that the moon on the horizon appears bigger than the moon in the zenith, when it is high up in the sky. And that is not true, as we know physically.

So, they did know it was an illusion?

Yes, and they tried to explain it. The most popular explanation in ancient times and one that is still being cited in the popular press nowadays is the Atmospheric Refraction theory. The atmosphere between the viewer and the moon seems to 'inflate' the moon from the point of view of the observer, similar to the bigger appearance of a coin placed in water. Ptolemy and others thought that you look at the horizon moon and you have a greater amount of atmosphere between you and the moon than you do when the moon is up in the sky, high in the zenith. That is a clearly physical explanation. You do not need to talk about the psychological make up, about the mind and the mechanisms of perception.
Unfortunately, that explanation is false, as one knows roughly since Kepler. Kepler showed through work with camera obscura that the image of the moon in the eye's retina is constant whether you see it on the horizon or at the zenith. As soon as you accept that point, no physical explanation will do. It can't be anything about atmospheric refraction. You need to have either a physiological or psychological explanation of the illusion.

Is there a definitive explanation for this illusion?

In the time of Kepler, there existed mainly three explanations: The Atmospheric Refraction theory; the Angle-of-Regard theory, which had to do with the position of the head and the elevation of the eye, and finally the Perceived Distance theory, that says that the mind perceives things bigger when they appear to be further away (and the moon at the horizon appears to be further away than the moon at the zenith). The last theory is also quite strong today, and it has many considerations in its favor. It's when you have an extended terrain in front of you, especially in the countryside, which you do not have in the direction of the zenith moon. The zenith moon's distance is from your own mind's point of view rather indefinite. You have no cues as to what its distance is. The theory also coheres with an evolutionary view of the mind: Our minds are made for perceiving things in the near environment, where we do have such cues; and having them is essential for survival.

And what is the actual state of the question?

Nowadays in psychology there are at least up to eight explanations for the Moon Illusion, some of which try to go deeper into the functioning of the mind and brain. Now, two of the old explanations are still available; only the Atmospheric Refraction theory no longer plays a serious role. But the other two, the Angle-of-Regard theory and the Perceived Distance theory, are still in the debate. And then there are all the new theories! While psychological research has, over the course of the last 150 years, become ever more sophisticated in developing new instruments and experiments for getting closer to the right explanation, it

seems we have moved farther away from it. That is quite puzzling.
So, this indicates that there must be a stubborn problem at the root of the Moon Illusion. That is why I think that if you want to understand the current situation in which psychologists are, it is not enough to look at the history as a mere collection of facts. You have to think about the conceptual and methodological problems hidden in the Moon Illusion and research about it.

It seems that, after all, the moon is not only a thing for 'lunatics', lovers, or terror movies…

No, it's not! But you may very well see that the Moon Illusion is the most popular natural perception illusion. There is a number of perceptual illusions that are artificial, which are only created in the lab, like the tricks of a magician. These are used as tools for teaching students in cognitive psychology how our perceptual system works. But the Moon Illusion is a natural illusion, it occurs in our "natural" habitat –so to speak- and we can observe it (or at least we think we observe it) without the usage of sophisticated tools or textbook materials.
It is immensely popular, and it may have to do with the fact that it is a particularly big object in the sky, it shines brightly at night… it gives you the occasion for romance. The other celestial objects like stars, comets and celestial constellations like the Big Dipper, also show this size illusion. When the sun is at the horizon, it also appears bigger than in the zenith. Only please do not try to do that experiment very often by yourself. Scientists in the seventeenth century who did so blinded themselves.

Entrevista: Virginia Mata M.

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