Brain plasticity from A to Z

Special issue of *Curr Opin Neurobiol* edited by Treves and Mrsic-Flogel

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The December issue of the journal *Current Opinion in Neurobiology* reviews current knowledge about brain plasticity, in its broadest sense, starting from the infinitely small (plasticity at the molecular level, in synapses) up to the macro level (the plasticity observable in human behaviour). Alessandro Treves (SISSA) and Thomas Mrsic-Flogel (University of Basel) have edited this issue involving some of the leading international experts in the field.

At a Ted conference held some time ago, Roberto D'Angelo and Francesca Fedeli recounted the experience of their son Mario: struck by a cerebral infarction when he was only 10 days old, he seemed destined to live with only one half of his brain functioning, with all the difficulties such a condition would entail at the cognitive (and motor) level. But things went differently: at 2 years of

age the boy (he can be seen in the video) can walk and speak like any other child of his age. It is not a miracle: even though Mario's case is particularly lucky (in part thanks to his parents' huge commitment to helping him), it is one of the many examples of the nervous system's ability to adapt successfully to adverse conditions. Scientists call it plasticity of the brain, a subject of great interest in neuroscience research, to which the journal *Current Opinion in Neurobiology* has now devoted its entire December issue, edited by Alessandro Treves, professor at the International School for Advanced Studies (SISSA) of Trieste and Thomas Mrsic-Flogel of the University of Basel in Switzerland. The journal specialises in systematic reviews of the literature on given topics, which are crucial for providing the scientific community with an overall view of the relevant research.

"The issue we edited aimed to bring together and conceptually connect different fields of research that rarely communicate with one another: it explores the different levels of brain plasticity from the chemical reactions taking place in synapses right up to plasticity in behaviour, passing through the different stages, and with a foray also into artificial intelligence", explains Treves.

Many researchers, many facets

"On the publisher's request, to put this issue together we collected about thirty reviews written by experts in the field", continues Treves. Which are the most significant contributions? "For example, the paper by Judit Gervain, former SISSA student now at Université Paris Descartes, devoted to language plasticity at birth, or the review by Agnes Kovacs, also a former SISSA student and now at the Central European University of Budapest, on the cognitive flexibility associated with bilingualism. Or still another interesting piece is the paper about "deep learning" – the new buzz word in artificial intelligence – written by Yasser Roudi, a brilliant ex-SISSA student now at the Kavli Institute, who last April won the Eric Kandel prize, awarded to a young neuroscientist every two years.

USEFUL LINKS:

- **Link to the issue of *Current Opinion in Neurobiology* devoted to plasticity: http://goo.gl/1PTcTU**

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