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Mind maths: The elements of thought

06 February 2013 by [Colin Barras](#)

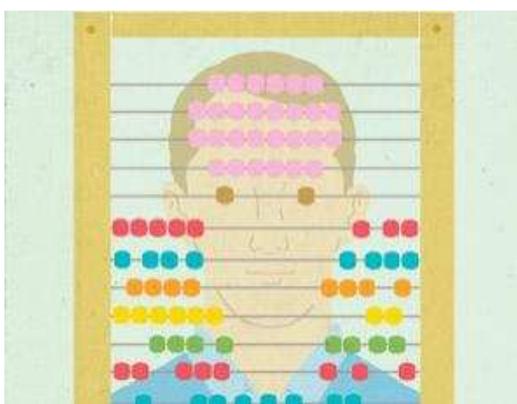
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Equations can describe everything from the brain's structure to the generation of thoughts and feelings – and may even help us understand consciousness itself

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How could an equation or formula ever hope to capture something as complex and beautiful as the human mind? In a sense we've long been describing the brain with numbers - 86 billion neurons, 1200 cubic centimetres, 1400 grams. But you might expect that more ambitious attempts to explain the brain with mathematics would be doomed to failure.



(Image: Dan Page)

Yet over the last few years, neuroscientists have built a mathematical framework for understanding many aspects of the brain. In the same way that Newton's laws of motion describe the dance of the stars and planets in the night sky, mathematical principles are now revealing telling patterns in the melee of our minds. What's surprising is just how often the brain's dynamics mimic other natural phenomena, from earthquakes and avalanches to the energy flow in a steam engine.

The equations we end up with describe everything from the brain's structure to the generation of our thoughts and feelings. They may even help us begin to understand the nature of consciousness itself. Join us as we explore the five laws that rule the mind.

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