

# Book Reviews

*Jane Maduram*

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## **Flutterland**

Ian Stewart

**F***latland* was the first science-fiction book I read, so I can tell you many things about the novel—how I found it, where I read it, what the weather was on that day—but none of these can communicate the sudden thrill of understanding, for the first time, an entirely new world. To pigeon-hole *Flatland* as a mathematical diversion, however, is to marginalize the sly wit of the novel. *Flatland* is relatively short, but within its pages Edwin Abbott details the intricacies of living between dimensions, and through the mask of the second



dimension, he makes sly jabs at the restrictive class system of his times. Not only is *Flatland* a technical masterpiece of math and language, it is a period piece that cannot be separated from its Victorian context. It was with some trepidation, therefore, that I started Ian Stewart’s “updated” sequel to *Flatland*—*Flutterland*.

I shouldn’t have worried. Stewart plunges forward with his usual combination of imagination, creativity, and groaningly bad puns, deftly creating a style that evokes the spirit of Abott’s classic without smothering it. He does this, rather unexpectedly, by continuing the story through a teenager’s perspective—complete with geometric slang (How orthog!), entries in a diary, and more skepticism than most professors pack. Victoria, the great-great-granddaughter of A. Square (narrator of *Flatland*), is a completely believable character, and if her family is a bit flat (pun intended), that can be excused. The entire book maintains a contagious sense of excitement even while conceding that its topics may be a bit, well, geeky.

Indeed, it would be unreasonable to discuss *Flutterland* solely in terms of literary merit because it is also, first and foremost, a mathematical exploration. Ian Stewart discusses items that will be familiar to readers of his old mathematical column in *Scientific American*—sets, fractals, and topological manipulations. To this mix, he adds a physics—Shrodinger’s cat, Einstein’s theory of relativity, and time warps. The concepts are beautifully explained on a conceptual level and are leavened with personification of characters. The Mobius strip becomes Moobius, the one-sided cow, while

Minkowski Space becomes Minny Space and the Space Girls (Curvey, Bendy, Pushy, Squarey), a spoof of the Spice Girls who have their own motto—Line Power!

As always, literary style and mathematical concepts are buoyed up by Stewart's almost infinite irreverence. It is encapsulated, perhaps, in a note in Victoria's diary that perfectly captures the tone of the book: "This math is cute, but it is a pig to remember." Stewart plays both sides in his fight for the reader's minds. Victoria's guide gives her a math lecture that sends her to sleep, but his manic smile and constant energy smugly dare the reader to keep up with the material. Stewart comments on Planiturthians (get it?) as well, pointing out—along with other interesting asides—that we can make Virtual Reality but not Virtual Unreality.

It is impossible to end this review without noting that this is the most intellectually satisfying book I have read in a long while, not just in terms of the ideas (most of which have been explained in Stewart's previous books), but also in view of the conclusion. Just when one thinks that Stewart has completely forfeited the theme of social commentary that runs through *Flatland*, he brings it up again in a stunning climax that changes everything the reader has understood and yet makes perfect sense—an explanation that meshes math and society in a way that seems not only natural but inevitable within the worlds of both *Flatland* and *Flatterland*. It is appropriate, then, that Abott's land has finally been brought into the 21st century.

## The Invention of Clouds

Richard Hamblyn

Clouds are easy to ignore, particularly in the hectic pace at MIT. Guessing at shapes in the skies is an image evoked by poets, not scientists, and it is possible to forget that there was a time in which the definition of clouds was significant matter for debate. Because of their fleeting nature, however, clouds were thought to be the ultimate test of scientific classification by such greats as Aristotle and Descartes. In his book, *The Invention of Clouds*, Richard Hamblyn investigates Luke Howard, the man who finally classified clouds, and defines the society that made him.

Luke Howard categorized clouds into the three shapes we are now familiar with—cirrus, stratus, and cumulus—each of which composes the other types of clouds in combination. His definition of clouds proved to be influential not only in the scientific world, but in the popular world as well. Howard was born in a time that was fascinated with science as entertainment. In a world that was being shaken by new technology and the French Revolution, science held the promise of being the great equalizer. At a time when workers paid to attend scientific lectures, Howard's discovery warranted not only articles in the latest scientific journals but also poetry by Goethe in a literary magazine.

Richard Hamblyn deftly captures the energy and excitement of this period by breaking his book into short vignettes that explore the journals, artists, poets, and public opinion of the times. By placing Howard in historical and cultural context, Hamblyn enriches our understanding of an otherwise frail subject. At times, Hamblyn's treatment is fragmentary; one wishes that he would delve into these fascinating tangents more thoroughly. Nonetheless, the world that Hamblyn re-creates is both rich and moving. One cannot help but empathize with the unfortunate Lamarck or share the terror of the volcanic aftermath of 1783.

Overall, *The Invention of Clouds* is an intriguing book, not only for its intended subject of clouds, but also for the excited exuberance of a society it portrays. The world that Hamblyn describes is one in which scientists, poets, and artists were united by a common urge to discover and describe the world they lived in. Perhaps gazing at the skies is not the sole domain of the poet, after all.



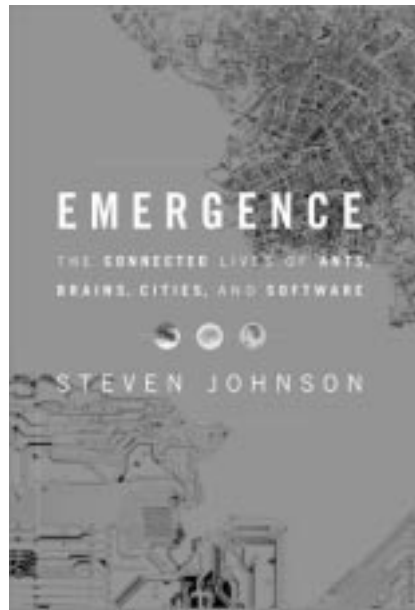
## Emergence

Steven Johnson

The wide-eyed exuberance of science-fiction pundits died out with the '80s, and with it, so did the wild dreams of having teleports in every home and regular jaunts to Alpha Centauri within twenty years. In *Emergence*, however, Steven Johnson invokes the same enthusiasm for technology on far more solid footing. Johnson examines the methods of learning that approach sentience

through “swarm learning,” the self-organization that occurs in large-scale environments. He finds this emergence of thought in unlikely places—a city, an ant farm, the Internet, and slime mold, among others.

Johnson begins the book by smashing reader preconceptions with his description of the slime mold, an organism that fluidly switches existence between a multicellular and a single-celled organism. From there, he describes the street culture of cities and explains how urban planning is, essentially, an attempt to make a city sentient on a block-by-block level. Johnson finally riffs on the “non-crazy” question of whether the Internet is or isn’t approaching a common sentience and describes free will in Sim City. In each of these places, Johnson argues, a large number of simple



components create a higher intelligence through evolution. In his ideal “bottom-up” world, the government, businesses, and television would be affected by a worldwide convergence precipitated by emergence online.

*Emergence's* conversational style and references to popular culture make the book quite approachable, and the concepts that Johnson brings up are explained without being oversimplified. The emergent biology of the beginning is interwoven with the emergent programming at

the end, and Johnson is careful not to leave loose ends. The content itself is highly engaging, and while the book tends to get repetitive, his enthusiasm is infectious. The future that Johnson predicts is believable by the end of the book, and although he acknowledges that emergence is defined by uncertainty, one hopes that the dreams he lays out come true.

The varied ideas of *Emergence* are fascinating, and, intriguingly, MIT professors play an inordinately large role in the biological and technical theories underlying the book. By far, however, the most interesting part of this book is the faith it holds in future technology. It is unlikely that any of us can even dream of setting off to Alpha Centauri within the next twenty years, but Johnson proves that we can still dream. ■