

BOOK REVIEW

Emergence: The Connected Lives of Ants, Brains, Cities, and Software

Steven Johnson
New York, New York, Simon & Schuster, 2001,
288 pp. \$14 (paperback).

In the front of this book, the author has included two illustrations: a diagram of the human brain and a drawing of the city of Hamburg in 1850. The outline of one clearly resembles that of the other. Along with humorously depicting part of the title of the book, these photos set the tone of the book—a light perspective on a scientific subject intended for a popular audience.

Johnson's descriptions of his encounters with various collective intelligence scientists portray very human experiences. For example, he describes one scientist as thus: "It is early fall and Gordon, dressed neatly in a white shirt...the hint of a tan from her last excursion to the Arizona desert." With another vivid description, Johnson describes the location of the Alexa Internet, home of collective intelligence data: "Moldy concrete, with a few spare windows...might have held a lawn mower and some spare file cabinets a few decades ago..."

The author discusses emergence in a more serious way. He states that organization or emergence comes out of millions of individual decisions (bottom up)—"a global order built out of local interactions" as seen in the ant community, a city, the human brain, and software. The street level of emergence—a collective intelligence that acts and thinks locally—is attributed to the pheromones in the ant communities. Body cells are not much different from ant communities in this respect, as they self-organize into more complex structures by learning from their neighbors. Ants communicate with pheromones and cells communicate with salts, amino acids, sugars, and other substances. Johnson's conclusion from the simple, pay-attention-to-your-neighbor system, is that "local information can lead to global wisdom." With this statement, the author conveys to the reader the way connected lives lead to global or collective intelligence.

The emergence of the medieval city of Florence's guild system, like any emergent system, was a pattern in time. The city's self-organization into clusters developed into self-organized "stickiness," creating a self-perpetuating cycle. The neighborhoods in a city function as a "kind of user interface." Like the clustered neighborhoods of the guilds in long ago Florence, any pattern that is capable of processing and storing information can become emergent.

Repetition or feedback equals learning, writes Johnson. Repetition of a phrase makes it become true in one's mind. The cellular basis of learning lies in the repetition of circuits (feedback loops), and the brain works in that way, with neural networks of feedback loops. Ant communities function in much the same way among the worker ants, with feedback loops using pheromones.

Johnson describes an intriguing computer simulation, StarLogo, that makes emergent behavior come to life. The monitor displays real-time animation of a slime mold following self-organizing emergent behavior, vividly displaying a system that is so hard to put into words and to visualize.

Mirror neurons and mind reading are an emergent part of the brain's neural network that will be worked on in years to come. These neurons have the ability to visualize the thoughts of another in a particular situation. Johnson describes this phenomenon of being able to imagine others' mental states as "monkey see, monkey do." Currently, scientists are beginning to create software applications that can develop a theory of human minds.

Steven Johnson wrote this book with the intent of making a complex scientific subject interesting to the public. He has certainly fulfilled his intentions. I found the book entertaining and engrossing.

—Lenore Teresa Bartsell



WEB SITE REVIEWS

The following are some Web sites that medical writers and editors will find to be useful (and fun) resources.

Instructions to Authors (www.mco.edu/lib/instr/index.html)

Finding online journal instructions to authors in the health sciences is easier, thanks to the Raymon H. Mulford Library at the Medical College of Ohio. At this Web site, you can search a comprehensive database of author instructions for more than 3,500 journals in the health and life sciences. All links are directly to the publishers and organizations with editorial responsibilities for the titles. The site also provides links to many statements regarding research ethics and the quality of clinical reports. These include the CONSORT statement, the ASSERT statement, the COPE report, the STARD statement, the MOOSE Consensus Statement, and others, as well as the “Uniform Requirements for Manuscripts Submitted to Biomedical Publications” and information about journal impact factors. Editors and writers preparing manuscripts for publication in the health and life sciences may find this site invaluable.

—TONIANN DERION, PHD, ELS

Antiqua Medicina: The History of Medicine from Homer to Vasalius (www.med.virginia.edu/hs-library/historical/antiqua/anthome.html)

For fun, check out this Web site, which offers a series of texts and pictures about medical beliefs, practices, and technologies in ancient times. Read light stories about Roman bathing establishments, medicine in mythology, surgery during the Roman Empire, ancient gynecology, healer cults, women in medicine, surgical instruments, and more. This site is hosted by the University of Virginia Health System, and the content was generated from materials assembled for a print exhibit of the same name created several years ago for Historical Collections in the Claude Moore Health Sciences Library.

—Melissa Bogen, ELS

Microsoft Most Valuable Professionals (www.mvps.org)

Included on the Microsoft Most Valuable Professional (MVP) site is a wealth of tips from people with considerable computing skills, who have proven their

expertise in particular areas through their longstanding contributions to various Microsoft newsgroups and other online forums. If you're interested in Word commands and learning shortcuts, check out this page:

www.mvps.org/word/FAQs/General/CommandsList.htm. Word's built-in list of commands produces a table of all the Word commands with their current key and menu assignments. However, the definitions of the commands are not necessarily intelligible; nor do they include descriptions of what the commands actually do. The site contains a zip file, “WordCommands.zip (50k),” which extracts to an Excel file, WordCommands.xls. Each command is listed with a description of what it does; in many cases a much fuller description than what Word itself displays when you scroll through the commands (by selecting Tools + Macros + Macros, and selecting “Word commands” under “Macros in”). If you don't have access to Excel, another link is available with PDF files.

Also on the site are tips for using Access, Excel, Publisher, Internet Explorer, Outlook Express, Windows XP, Visio, and HTML.

—Melissa Bogen, ELS

Need a Starbucks treat? (www.starbucks.com/shop/subcategory.asp?category_name=Special+Values)

Or perhaps a simple caffeine fix? (www.thinkgeek.com/caffeine/)

Another online geek store: (www.geekextreme.com/modules.php?name=Store)

If you want to review a book, video, or CD-ROM, send an e-mail to the Managing Editor at amwa@amwa.org. If you have found a useful (or fun) Web site, send an e-mail to melbogen@optonline.net.