■ ANDREW RUPPEL, Feature Editor, McIntire School of Commerce, University of Virginia

Making the Connection

Andrew Ruppel, Feature Editor

Good analysis requires identification and disentanglement of interlocking influences. There are typically more influences at work than one mind can fathom, so the real art is in isolating those causal strands that bear the bulk of influence. Some people are clearly better at this than others. Some excel at painstakingly tracing a very lengthy causal chain; others, either by intuition or luck, can pinpoint intricate connections immediately; still others are better at assembling the connections identified by colleagues into a coherent whole. The books below present instances of some sharp minds attempting to discover connections and create coherent wholes.

The Sun, The Genome, and The Internet: Tools of Scientific Revolutions

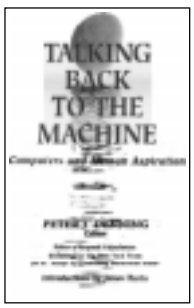
by Freeman J. Dyson

Oxford University Press, 1999, 124 pages.

www.oup.com

PHYSICIST DYSON TAKES ISSUE WITH the notion that advances in science come about when maverick concepts overcome the disdain and politics of the established intellectual order. Rather, real advances occur as a result of instrument and apparatus building. It is these tools that enable new work to be done. In constructing them, important side problems have to be resolved. Thus, in Dyson's view, tool building is a richer approach to scientific advance than theory building. For Dyson, the tools of considerable promise now are the ones implied by the title of his book. The sun represents solar energy devices, which he feels are mankind's best hope for dealing with the growth of economies and their insatiable demand for energy. The genome represents the tools and techniques for the mapping and manipulation of gene structures—particularly those of animals and plants. The Internet represents the increasing ubiquity of computing machines and telecommunications devices. Dyson goes beyond the technological promise that these three major "forces" individually afford us. He sees their joint flowering as reducing the gross disparities in well-being among people and nations; so for him there is an ethical imperative in their development. Many roads to the future are possible, says the author, and we should make a concerted effort to pursue a worthy course.

Each of the three forces was the subject of a talk given by Dyson at a lecture series sponsored by the New York Public Library and refined for publication here in book form. The lectures also contain forecasts for beyond 2000. Dyson (who, by the way, is the father of IT guru Esther Dyson) expresses his wariness of technology forecasts, pointing out that many nineteenth-century writers, such as Jules Verne, merely predicted that things would get bigger. As we know, it is making things smaller that is the hallmark of contemporary technology. Some of the most astonishing predictions are offered in the third lecture. For example, Dyson sees genetic engineering going beyond cloning to enabling parents to introduce desired genes into the conception of their children. He says, "Having reprogenetic babies at home might become a popular hobby, like desk-top publishing today." Does that mean soccer moms will become Frankensteinian handmaidens? We need to talk about this.



Talking Back to the Machine: Computers and Human Aspiration.

Edited by Peter J. Denning

Copernicus, 1999, 194 pages.

www.copernicus-ny.com

IF YOU'D LIKE MORE TALK ABOUT THE FUTURE, then try this collection of 16 outlook addresses delivered by various experts at the ACM

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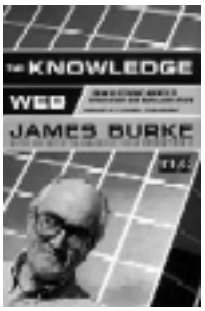
50-year celebration back in 1997. It supplements the compilation of specially commissioned essays published as *Beyond Calculation* (reviewed in *Decision Line*, July 1997). Speaker introductions for each address are reproduced also. They were made by that master of creative (dare I say, contrived?) connection-ing, James Burke. Among the prominent speakers whose remarks have been transcribed for this collection are Gordon Bell, Nathan Myhrvold, and Murray Gell-Mann. Also included is FCC Chairman Reed Hundt—whose self-serving opening remarks are typical of a political appointee. However, he does remind us that two-thirds of the world's people have never made a phone call. (Have you checked your voice-mail lately?)

Chilean Fernando Flores' talk tends to ramble, but he observes that the Web is adding new kinds of transactions (science-fiction author Bruce Sterling calls them *paramarkets*) and new communities of communication. Media forms and formats are commingling and special effects are now so special that we don't know what is real anymore, says Internet pioneer Vinton Cerf. We need "new techniques to distinguish visual fact from visual fiction." Brenda Laurel favors the visual fiction known as virtual reality (she's a former theater designer) because it frees the entire body for inputs, not just by fingers on the keyboard. Think of VR suits as "smart costumes," she says. Maurice Wilkes, a very early programmer and cache memory conceptualizer, is concerned about the growing gap between processor speeds and memory speeds. He sees extension of the cache concept as the solution. He doesn't, however, see improvements coming in operating systems and so despairs of the long-range outlook for computing. Educator Elliot Soloway also despairs—despairs that our grade school system overemphasizes verbal instruction at the outset and thus holds back development of 'non-verbal' students. Why can't art, math, and thinking games be given more of an early role? he asks.

Burke provides the closing commentary to this set of speech transcripts about the 50-year outlook for computing. He concludes that the speakers, as a group, were optimistic and held a positivist view of technology. One would be quick to point out that the speakers' and the audience's voluntary connections to ACM almost guarantee both these attitudes. Readers wanting more of James Burke's own creative connections should consider his latest book, *The Knowledge Web*.



The Knowledge Web: From Electronic Agents to Stonehenge and Back

by James Burke

Simon & Schuster, 1999, 320 pages.

www.SimonSays.com

BURKE HAS MADE HIS MEDIA REPUTATION by linking interesting occurrences with even more interesting outcomes. For example, the development of water gardens in the Renaissance contributed to the invention of the carburetor. This book is his latest collection of interlaced scientific and cultural developments. As you can imagine, the World Wide Web is a linkage collection that he salivates over. Burke feels that the Web's ability to distribute incredible amounts and varieties of information will undoubtedly give rise to even more serendipitous interactions than history has generated (and Burke has recounted) thus far. Burke also appropriates the Web's hypertext and URL leap-frogging approaches for cross-referencing the various techno-historical events he brings to the fore in the book's 10 chapters. He used this 'gateway' gimmick in his previous book, *The Pinball Effect*. Dictionary and encyclopedia compilers have, of course, been doing cross-referencing for years, but Burke tries to sell it as a way of jumping from one timeline to another rather than from one term to another. His approach would be far more instructive if he actually provided the timeline graphics.

Origins of Architectural Pleasure

by Grant Hildebrand

University of California Press, 1999, 174 pages.

www.ucpress.edu

SO WHAT'S THE CONNECTION HERE? Well, it has to do with criteria and human judgment—clearly components of decision-making. The author draws upon various psychological studies and architectural examples to ascertain why people like or dislike certain spatial arrangements and conditions. These observations have value to those who would understand aesthetic choice as well as to those who would design spaces (that includes virtual spaces) to intrigue participants. Hildebrand labels the factors he uncovers: refuge / prospect; enticement / peril; and complexity / order. That is to say, a space offers pleasure if it has the right balance of each of these *yin-yang* pairs. Hildebrand believes these dimensions stem from innate human behavior geared to survival, particularly the acquisition of key information in a potentially stimulus-rich and threatening environment. One interesting point with regard to complexity vs. order says that we like new patterns, but only those having familiar components that we are 'clever' enough to recognize. Totally new patterns are not so welcome. As they say, we see what we want to see. A clear warning to forecasters who rely too much on graphical analysis and extrapolation. Well-written and illustrated, this book will enhance the reader's appreciation of the psychology of spatial perception.

Zen Computer: Mindfulness and the Machine

by Philip Toshio Sudo

Simon Schuster, 1999, 216 pages.

www.SimonSays.com

A NEAT LITTLE BOOK THAT OFFERS SOLACE to those flummoxed by 'fatal error' warnings and soothing sounds to those already in tune with their computers. What could be more *yin-yang* than the zero-one personality of that silicon simpleton, the computer? Actually, I should be more mindful and not disparage the PC, says author Sudo, whose previous book was *Zen Guitar*. We should recognize all the contributions of the many people who designed, built, programmed, transported, unpacked, placed, installed, repaired, dusted, etc. the device that dominates the desktop in front of us. Sudo asks us, therefore, to give an explicit nod to the machine each day in recognition of these

prior connections to its presence. Doing so thanks all those involved and puts us in harmony with the machine.

The book is cleverly organized along system installation lines. Its 10 concise chapters are labeled: Read Me, System Requirements, FAQ, Boot, Install, User's Guide Parts I & II, Maintenance, Trouble-Shooting, and, Shut Down. Tree diagrams are nicely used to organize hardware and software terminology within the User Guide chapters. Quotations and *haiku* are used liberally. Sample: "*The Web site you seek cannot be located, but endless others exist.*" Sudo recommends the ritual of the tea ceremony, with its step-by-step preparation and attention to detail, as a model for doing computer programming.

One can "jump" into this book at any point, making it great bedside reading as one tries to calm the brain down from a hectic (but hopefully harmonious) day at the keyboard. Or you could keep it next to your machine for meditating on what your modem might bring next. ■

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THE DECISION SCIENCES PICTURE BOOK

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Fortuna Can be Tamed

Andrew Vazsonyi, Feature Editor

Oops! I goofed. In my last picture column I said, "The most decisive conceptual event of the twentieth century has been the realization that the world is not deterministic but uncertain, governed by the laws of Goddess Fortuna, the ruler of chance."

The Bible says, "There is no new thing under the sun." Indeed, Ecclesiastes points out that chance governs all. The new thing, I guess, is that Fortuna can be tamed. ■

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Chance Belongs to All

... The race is not to the swift, nor the battle to the strong, neither yet the bread to the wise, nor yet riches to men of understanding...

But there's where I lay my dough!