system can cause amplification and enhance the signal-to-noise ratio of a signal passing through the system.

Each chapter is prefaced with ten or so intriguing and provocative quotations that occupy several pages. There are also more than 60 pages of notes at the end of the book, arranged by chapter, expanding on the material in the main text. Many of them are useful and interesting, but in the end I got tired of continually turning pages to find them; they would have been far more convenient as footnotes.

Has Kosko succeeded in his aims? I believe he has, to a large extent, although in one or two places he illustrates the G. K. Chesterton dictum that "He who simplifies simply lies" by conveying a misleading impression. For example, few readers will appreciate that stochastic resonance can do nothing to enhance the signal-to-noise ratio of a given signal. It can certainly ameliorate the information loss that otherwise occurs when a signal passes through a nonlinear system, but I very much doubt whether readers will understand this fact from Kosko's discussion. I suspect, though, that schoolboy howlers such as "The brain consumes about 20 watts of power each day" are not from the author's pen.

I am surprised that Kosko omits all mention of optimal fluctuational paths, given their conceptual simplicity and the nice way they link together many of the other ideas he presents. Most of the interesting and important events in noisy systems involve such optimal paths, including chemical reactions, mutations in genes, and failures of lasers and electronic devices. In all these cases, the system fluctuates near an attractor of some kind for a long time, and then travels along an optimal path to a different attractor. Remarkably, despite the noisy driving force, these paths are deterministic in character.

While accepting the author's broad view of what constitutes noise, I also feel that some of his writing introduces its own noise, through the unnecessary introduction of a multiplicity of distracting ideas that are tangential (or irrelevant) to the point being discussed. What is certain, however, is that every reader of this book will end up learning something new and interesting. ■

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SCIENCE IN CULTURE

A modern megalith

Mariko Mori's glass sculpture responds to the death of stars.

Martin Kemp

Prehistoric standing stones and rings, many erected more than 5,000 years ago, are awesome achievements. Not surprisingly, the greatest of them, such as Stonehenge, have served over the centuries as magnets for legends and mystical mumbo-jumbo.

The reality being revealed by modern archaeoastronomy provokes almost as much wonder as the legends. Perhaps most astonishing are the astronomical alignments that have been demonstrated in megaliths. It is clear that our 'primitive' forebears not only observed celestial phenomena with remarkable precision, but also built their great stone monuments as a means of relating their earthly existence to cosmological events far beyond their reach.

Such astronomical megaliths serve as the inspiration for an installation by that most high-tech of artists, Mariko Mori. A student of fashion in her native Japan, she worked briefly as a model before studying art in London and now lives in New York. She began by exploiting multimedia to fashion herself into a futuristic 'cyber-chick', transformed into a synthetic fantasy of kitsch sexuality, far removed from the ragged desires of our organic reality.

Superficially — and it is easy to see such work as superficial — she seemed to belong to a late species of pop art, delighting ironically in the sheen of slick popular imagery. However, she has insisted on a more serious purpose, adducing her immersion in Buddhist philosophy to stress the interconnectedness of all things, via art, science and technology.

With her earlier work it was difficult not to see these high claims as somewhat forced. However, her recent creations have laid this problem to rest. She has been collaborating with scientists to produce experiences that are startling in their technical sophistication, yet evoke both the inner world of our minds and the outer worlds of the cosmos.

***Tom Na H-iu*: the output of a neutrino detector becomes a meditation on the soul.**

SHIRAISHI CONTEMPORARY ART, TOKYO

At the 2005 Venice Biennale she exhibited *Wave UFO*, a futuristic pod in which the brainwave data from electrodes attached to three participants were projected on the ceiling as mutating coloured shapes. Three kinds of waves — alpha (blue), beta (pink) and theta (yellow) — were used to render visible endlessly variable arrays of mental processes. Now, at the 2006 Singapore Biennale, she is showing *Tom Na H-iu*, a 3-metre-high radiant glass monolith that is plugged into cosmic radiation.

The translucent megalith is suffused by light from an internal LED, controlled by a computer, which is, in turn, linked to the Super-Kamiokande detector used in the Kamioka Observatory in Japan to detect neutrinos from outer space. Among the neutrinos that govern the megalith's light emissions are some that emanate from exploding, dying stars — supernovae. Programmed to respond to the detection of different neutrinos in real time, the sculpture glows with colour-coded traces of ancient violence from remote regions of the cosmos.

In Celtic mythology, say the work's promoters, Tom Na H-iu is a place where the souls of the dead linger before being reborn, and the Celtic standing stones that inspired the artwork were believed to play a role in this spiritual transmigration. Mori is tapping into the puzzles of birth and death across enormous distances and deep time. The microscopic is a mirror of the cosmic. The lives of our minds and bodies are integral to the processes that govern the Universe.

Just as our Neolithic ancestors reached out to the stars, tuning into the apparently eternal patterns that ruled their seasonal lives, so Mori's sculpture resonates to the beat of celestial time. However, that beat is no longer that of the traditional music of the orderly spheres, but drums out the death march of great stars.

A larger version of *Tom Na H-iu* is on show with other work by Mori at the London gallery Albion until 22 December.

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