STRIKES AND SPARES

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"You're a science fiction writer, huh? What have you predicted?" I've been asked this many times-and my usual reply is, "I'm not a prophet and I don't predict..." But in a way, the question is legitimate. Science fiction is often charged with the task of modeling the future, or a variety of futures. If a writer never scores a few strikes, why bother bowling at all?

So... a few strikes, and some spares:

QUANTUM LOGIC COMPUTERS: "HEADS" UP!

Fiction:

In my novella "Heads" (1991) (published as a separate volume by Random House U.K. under their Legends imprint, and by Tor in the U.S.) I described Quantum Logic Thinkers in some detail. In the future explored by Queen of Angels (1990), "Heads," Moving Mars (1993), and my next novel, Slant (~1997), computers are differentiated from "thinkers," which use neural net processes and are sentient. Quantum Logic thinkers, like quantum logic computers, utilize quantum processes and logic to perform their work, bringing in unusual and sometimes spooky results. (There's actually a hint of this in my earlier novel, "Blood Music" (1985) where I touch on using quantum processes to speed biological computers.)

Fact:

A couple of years after the publication of "Heads," articles began appearing in various science magazines heralding the development of quantum logic processors, which use the pathways available in undetermined multiple universes to speed computing.

No evidence yet that their results will be particularly spooky! Theorist and mathematician Steve Selesnick, who has published a number of high level papers on quantum computing, sent congratulations on my being ahead of the scientists...

THE BOSE-EINSTEIN CONDENSATE

Fiction:

In "Heads," researchers on the moon refrigerate a sample of a few thousand atoms to absolute zero, creating a peculiar state of matter that behaves as if it were a single atom. In Moving Mars, this state of matter is utilized to access the "Bell Continuum," with extraordinary results. ("Heads" was inspired in part by an article on the search for absolute zero and the Third Law of Thermodynamics in The Sciences magazine.)

Fact:

Scientists Carl Wieman and Eric Cornell and their colleagues recently cooled a small sample of rubidium atoms (2000 or so) to a record low temperature, creating what is called a Bose-Einstein condensate, a new state of matter. Some of the properties of this state are eerily similar to those of the super-cold sample in "Heads." So far, no disastrous side effects, and no indication that there is any such thing as the "Bell continuum"! But then-they haven't reached absolute zero.... yet.

SPARE:

Fiction:

Eon (1985) engages in some very outr, thinking about physics, which to my delight has amused and entertained a number of physicists-and not just those who also write science fiction! In Eon I also speculate about uploading and downloading of personalities in "City Memory," future libraries, and many other things. The politics of the Cold War dominates the near future in the first chapters of the novel (a clear miss in prediction!) but other ideas have met with nibbles from the makers of reality. "Picts," ornate icons utilized as a kind of projected graphic-speak by humans in the future of Eon, have been discussed in New Scientist magazine as a new method of communication. Other predictions-utilizing space-time as a building material, for example-have yet to be realized!

BIGGEST STRIKE OF ALL:

Blood Music (1985), expanded from a short story of the same name first published in ANALOG in 1983, has been heralded as the first instance of nanotechnology in science fiction. K. Eric Drexler and I seemed to be having similar ideas at about the same time-Drexler published his first article on molecular engineering in 1981-but his work was not widely known at the time, and was unknown to me.

Blood Music has become a must-read for biotech researchers, and Drexler has made nanotechnology a household word and a real spur for radical social change, perhaps the follow-on to the industrial revolution. I do not claim any precedence over Drexler in this issue-clearly, his vision was earlier and clearer than mine, and more forcefully logical-and I've speculated extensively on the implications of nanotechnology (calling it such) in my novels Queen of Angels and Moving Mars.

The real paradigm shift here is the notion that cells are in fact nothing more than very complex protein machines, self-organizing factories, and that cellular processes are a mix of chemistry and mechanics. If cells can do it, so can we!

Nanotechnology is now commonplace in science fiction. It's a pleasure to have been a pioneer!

MORE GRAPHICS SPECULATION... AND CONSULTING

After the publication of Queen of Angels (1990), I received a call from Nathan Myhrvold at Microsoft. Nathan, then head of the Advanced Technologies Group, invited me out to some fine dinners at Rovers restaurant and other magnificent eateries here in Seattle, to talk about the future of multimedia art forms. In particular, he wanted to know what "LitVid" looked like. In Queen of Angels, LitVid is a mix of text and image delivered over "the Net."

In an article called "The Machineries of Joy," first published in 1987, but written in early 1984 for Omni Magazine (and, for reasons unknown, not printed by them) I had speculated on the coming "Visual Typewriter," when computer graphics creation systems would be on everyone's home computer, allowing cheap at-home production of high-quality motion-pictures. (The article begins, "'Dinosaurs!' The artist spreads his arms as if to embrace them. 'I need the exact specifications-gridwork layouts of bones, muscles, scale patterns'... 'If I have these, I can put them into a computer. We can program each muscle, make the skin ripple over the muscles. Tell the computer how they took a step, how they fought...'" The artist was Ron Cobb.)

But as to the detailed nature of all this... At the time, I couldn't give him a clear answer.

Subsequently, we focused our inquiry on what future interactive fiction would be like. Microsoft invited a number of SF writers, myself included, to participate in a symposium on the future of entertainment. The Microsoft participants were way ahead of most of us on this topic, and the seminar was inconclusive.

Three years ago, Nathan scored a real coup by bringing his one-time colleague at Cambridge, Stephen Hawking, to Vancouver and Seattle to deliver a pair of lectures. To my astonishment, Nathan invited my wife, Astrid, and me to a dinner for Hawking, at Rovers restaurant. To our great honor, we were seated at the same table with Hawking, Bill Gates, Nathan, and a small number of key Microsoft folks, many of whom I had met before. It was quite an evening...

Bribed so magnificently, and thoroughly inspired, within a few days, I came up with an answer to Nathan's questions: a clear picture of the nature of interactive fiction, delivered over the Net. A week later, I pitched my speculations to Nathan in his office. The pitch took ninety minutes, and after it was over, Nathan and I stared at each other, a little amazed. I said, "But of course, Nintendo and Sega must be aware of all this stuff!"

Nathan shook his head. "Not at all. They really have no idea!" he told me.

I also mentioned that he should look at the (then current) issue of Cinefex magazine devoted to the CGI (computer graphics imagery) special effects in Jurassic Park. "Look at the ads," I said. "Some of those companies will be the real movers and shakers in the future of entertainment."

Within two months, Microsoft purchased Softimage, one of the CGI software companies advertising in that issue of Cinefex. And ever since... Well, it seems to me that Microsoft has been following a strategy that leads to the scenarios laid out in my pitch.

Every now and then, I return to Microsoft and see some of what they're working on.

It's good stuff. And somehow parts of it look familiar to me... and other parts, I could never have guessed.

Here's the original article, **"The Machineries of Joy,"** from 1983, and then, the pitch delivered to Microsoft, as I wrote it up a few weeks later, with some explanatory notes for its recent publication in THE SFFWA HANDBOOK, 1995 edition.

You be the judge!