WATCHFUL WAITING

By Isabel Beichl, Editor in Chief

SOME YEARS AGO, AFTER LISTENING TO A LECTURE IN WHICH THE SPEAKER CLAIMED TO HAVE A REMARKABLE NEW APPROACH TO COMPUTATION, A WISE FRIEND REMARKED THAT WHENEVER HE HEARD RUMORS OF A DISCOVERY THAT SOLVES EVERYTHING, HE RESOLVES TO WAIT SIX MONTHS

before bothering to learn about it. I think this is an intelligent viewpoint on the significance of announcements of brand new, radical, revolutionary, and disruptive technology.

This is not to say that there are no revolutionary advances in technology. But often their effect accumulates in a slow and subtle way. And, as it unfolds, reality often contradicts prognostication. This is one point I'm hoping to make in this essay. Other points include the fact that "new technology" is often much older than most think; identifying technology trends before there's enough data to justify the claim is problematic; and, finally, solved problems often don't remain solved.

One example of how reality confounds expectations comes from Sweden. By the end of World War II, auto traffic in almost all countries in Western Europe was on the right side of the road. Sweden was the only country in the northwest of the continent that drove on the left. But, unlike England, Sweden had a long land border with a right-hand driving country—Norway. This made life interesting for those traveling from Sweden to Norway or vice-versa. Sweden finally changed to right-hand driving in 1967; initially, the switch was widely unpopular. According to Wikipedia, the change had repeatedly been voted down over the previous 40 years. Chaos, with a huge increase in traffic deaths, was predicted. In fact, traffic deaths went down and, before too long, Swedish pedestrians learned to look left when crossing the street.

The second point is about "innovations." Often, a technology that is touted as wonderful and new is, in fact, something quite old whose time has finally arrived because of other changes in technology. The most dramatic example I know of is the fax. Commercial telefax was available in 1865, 11 years before the invention of the telephone. The first color fax was sent in 1924, the same year as the first wireless fax transmission. However, only in recent decades has the overall technology infrastructure reached a point that allows fax to become almost universal. (Alert readers will have noticed that I avoid taking up the vexed history of stored program computing's invention.)

What I sincerely believe to be the best example of a (mis)perceived trend is the claim of print media's impending end. In fact, the number of books printed is increasing, with well over 200,000 books printed each year in the US alone. The nature and use of print media is certainly changing, just as the advent of television changed the uses and nature of movie theaters. However, no matter haw many ads for Kindle readers Amazon puts on its Web page, books and other print media are not about to vanish.

For *CiSE* readers, one of the more visible solved-but-really-not-solved technological problems is that of languages for making better use of advanced computer architectures. At the 2010 International Conference for High-Performance Computing, Networking, Storage and Analysis (SC10), we saw many new language projects. One claimed to support a multithreaded parallel programming model at a high level by supporting abstractions for data, task, and nested parallelism. It also claimed to enable optimizations for the locality of data and computation in the program via abstractions for data distribution and data-driven placement of subcomputations.

Whew! That's some list of capabilities. This project is both interesting and attractive. But those with reasonably long memories really don't expect it to optimize over all of those capabilities.

Patience, courage, and fortitude are useful when evaluating new technologies. Ultimately, time, close scrutiny, and a commitment to actual capabilities as they emerge in real-world use are the true tests of innovation. ⊡

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