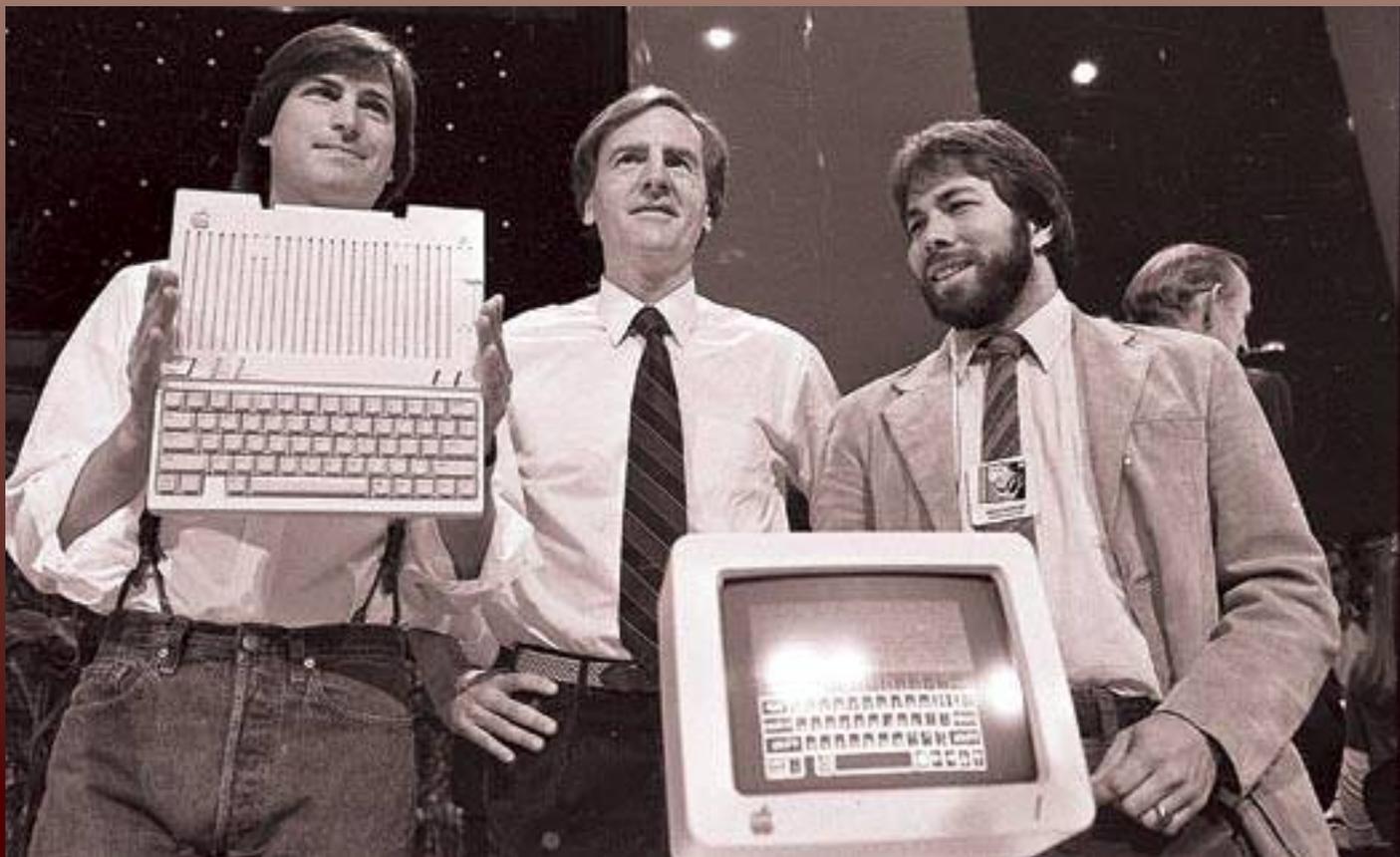


They Said It Couldn't Be Done...

Over and over experts in industry and science have argued that further achievement was impossible or that the end was near.



Ignoring predictions of failure: Though several early computer pioneers believed that individuals would never need or demand personal computers, Apple Computers proved them wrong and started a PC revolution.

by Dennis Behreandt

According to energy pessimists, we have reached the age of “peak oil” when production has reached and surpassed its peak. The implication is that supplies will contract — a truly frightening prospect in an era of increasing demand for energy. The inevitable conclusion the pessimists reach is that there will be an “oil shock” like no other, jolting the world into economic chaos, or worse. In his 2004 book *Out of Gas: The End of the Age of Oil*, Caltech physicist David Goodstein warned: “we can, all too easily, envision a dying civilization, the landscape littered with the rusting hulks of SUVs.”

This prediction is tame compared to that made by Colin Campbell of England’s Oil Depletion Analysis Centre. In 2002, Campbell warned that peak oil would lead to “war, starvation, economic recession, possibly even the extinction of homo sapiens.”

These are frightening predictions. But forecasting the nature and direction of future developments is a notoriously difficult task. These usually proliferate when any suitably important trend is just getting underway or is just coming to an end. They also proliferate whenever a new technology threatens to supplant an old or when, to the casual observer, further advance along one line of inquiry or another no longer seems possible. Over the past century or so, various situations fitting one or more of these descriptions have prompted forecasters to make sweeping declarations about the future. In many cases, the expert opinion held with regard to any given situation was that “it couldn’t be done.” As often as not, expert opinion was wrong.

The Future Does Not Compute

Computers are everywhere. Not only are they in the laptops and PCs and Palm Pilots that fill homes and offices, they are in our

cars, telephones, fax machines, cash registers, and televisions. They are so ubiquitous that historians of the future will likely look back on the present age and conclude that the Industrial Revolution was followed by the Personal Computer Revolution. And yet, even on the cusp of that revolution, as innovators at IBM, Xerox, Microsoft, Apple, and elsewhere were about to introduce the machines that would remake the world, knowledgeable skeptics argued against the need and potential for the computer to penetrate daily life.

One such skeptic was Ken Olsen, founder and CEO of Digital. In 1977, during a convention of the World Future Society, Olsen stated: "There is no reason for any individual to have a computer in his home." Legend has it that Olsen's PC skepticism led to his ouster from Digital in 1992 and to his company's declining prospects. Once the second leading computer maker in the world, Digital fell behind such upstarts as Dell, Compaq, and Gateway and was eventually gobbled up by competitors.

For Olsen's part, he says his quote was taken out of context. What he meant was that computers in the home would never be used to control all aspects of the home environment. Writer and historian Edgar H. Schein, who wrote a book about the history of Digital, discussed the situation with Olsen. "As Olsen explained to me at length and attempted to make clear, he thought it would be unacceptable to have the computer in the home *controlling* everything." Nevertheless, Olsen, it turns out, is wrong about this too. The burgeoning market for home automation technology already features products and systems for computer control of many home functions, from controlling high-tech audio-visual entertainment systems and security systems, to Internet connectivity for kitchen appliances, and control of lighting and heating, ventilating, and air conditioning systems.

A recently televised episode of *Extreme Homes* on the cable television network HGTV, for instance, spotlighted a home that continuously monitors home functions and, without the owner's intervention, is capable of sending an e-mail to the plumber if the drains back up. It is only a matter

of time before such technologies, already widely available in luxury homes, become standard features in most new construction.

Another famous prediction that didn't pan out has been attributed to former IBM CEO Thomas Watson. According to one widespread story, in 1943 Watson said, "I think there is a world market for maybe five computers."

It is difficult to find evidence that Watson actually said this. Perhaps he did; perhaps he didn't. But another computer pioneer reportedly did say something very similar. Writing in the journal *American Scientist* in 1970, British scientist B.V. Bowden recalled a meeting he had had with computer pioneer Douglas Hartree in 1958. According to Bowden, that year he "went to see Professor Douglas Hartree, who had built the first differential analyzers in England and had more experience in using these very specialized computers than anyone else. He told me that, in his opinion, all the calculations that would ever be needed in this country could be done on the three digital computers which were then being built — one in Cambridge, one in Teddington, and one in Manchester. No one else, he said,

Regarding the ability to meet oil demands, once again the experts are saying "it can't be done" — overlooking the fact that new technology and discoveries could increase oil reserves, and could also reduce our present dependence on oil in favor of *other* energy resources.

would ever need machines of their own, or would be able to afford to buy them."

Even *Popular Mechanics* underestimated the rapid evolution of the computer. In 1949 the magazine argued that in 50 years, "Where a calculator like the ENIAC today is equipped with 18,000 vacuum tubes and weighs 30 tons, computers in the future may have only 1000 vacuum tubes and perhaps weigh only 1.5 tons." In actuality, 50 years later, in 1999, computers were devoid of vacuum tubes, and laptops could be purchased that weighed only a few pounds.

Other Outlandish Predictions

Computers are not the only technology to elicit wildly inaccurate predictions from experts. Any sufficiently important technology in its early days of development can



Y2K was touted as being an impending catastrophe — computers would fail and airplanes would fall from the sky — and even the White House had a Y2K crisis center (shown).



Smart home systems: Despite skeptics' predictions that people would never accept smart homes and appliances like this clothes dryer, which can temporarily shut down some of its own functions when it detects a power shortage, sales are booming.

create fertile ground for misinterpretation and misunderstanding. Consider the early days of the automobile. In 1911 Barney Oldfield, at the time one of the nation's most famous race car drivers, argued that cars were plenty fast enough and that further development for speed was unnecessary. "The science of speed has reached a point where any manufacturer can produce a car which will satisfy any sane buyer," Oldfield wrote. "There is no demand and little need for further development along speed lines."

Not long after Oldfield made this assessment about automobiles, the *New York Times* upbraided pioneering rocketeer Robert Goddard for suggesting that rockets might fly in space. "That Professor Goddard with his 'chair' in Clark College and the countenancing of the Smithsonian Institution does not know the relation of action to reaction, and of the need to have something better than a vacuum against which to react — to say that would be absurd. Of course, he only seems to lack the knowledge ladled out daily in high schools," the *Times* wrote in an editorial in 1920.

That "expert opinion" is often based more on the expert's overconfidence than on sound judgment is illustrated by the otherwise brilliant British mathematician and physicist Lord Kelvin. According to author and physicist Eric Weisstein, Kelvin made several predictions that fell flat. In his encyclopedia of scientific biography, Weisstein notes that an "example of his [Lord Kelvin's] hubris is provided by his 1895 statement 'heavier-than-air flying machines are impossible.'" Weisstein also notes that Kelvin was not just a skeptic of flying machines. At an address to the British Association for the Advancement of Science in 1900 Kelvin stated:

"There is nothing new to be discovered in physics now. All that remains is more and more precise measurement." Lord Kelvin made this statement 45 years before the advent of the nuclear age.

The End Is Near

The ultimate example of crazy, off-base prognostication came with Y2K. It seems a distant past now, but in the two or three years leading up to the year 2000, practically the entire world, it seemed, was convinced that computers would fail en masse on January 1, 2000.

Wired News has maintained an online archive of some of the wild predictions experts in the computer industry made concerning the issue. According to *Wired's* Declan McCullagh, in one of these predictions, computer consultant Cory Hamasaki wrote that Y2K will be "bad enough, of course, to qualify as a disaster ranking with the Black Plague, if not the extinction of the dinosaurs." Another example archived by *Wired* comes from the book *Time Bomb 2000* by widely cited authors Ed and Jennifer Yourdon. They wrote: "The Year-2000 phenomenon is clearly

such a jolt, and we believe that it will be much more pervasive and serious than most of the [disasters] we've experienced in modern history."

Predictions about peak oil are much like predictions about Y2K. Often, these predictions warn that there is nothing that anyone can do to avert the crisis while also claiming that when the crisis arrives, it will devastate society. Unlike Y2K, however, fear over oil depletion is not tied to a particular date, after which the fear is obsolete. No, oil fears are timeless, good for frightening people of any age. Daniel Yergin of Cambridge Energy Associates, writing about the current energy scare in the *Washington Post*, noted: "This is not the first time that the world has 'run out of oil.' It's more like the fifth.... A similar fear of shortage after World War I was one of the main drivers for cobbling together the three easternmost provinces of the defunct Ottoman Turkish Empire to create Iraq. In more recent times, the 'permanent oil shortage' of the 1970s gave way to the glut and price collapse of the 1980s."

One of those predicting the imminent depletion of the world's oil in the 1970s was President Jimmy Carter. In a speech on energy given on April 18, 1977, Carter warned that complete depletion of oil was imminent. "Unless profound changes are made to lower oil consumption, we now believe that early in the 1980s the world will be demanding more oil that it can produce," Carter warned. Lest anyone misunderstand, he made clear the scope of his prediction later in the speech. "World consumption of oil is still going up," he said. "If it were possible to keep it rising during the 1970s and 1980s by 5 percent a year as it has in the past, we could use up all the proven reserves of oil in the entire world by the end of the next decade."

Now, as Daniel Yergin observed, history is repeating itself with the experts arguing that the oil is running out. With regard to the ability to meet the demand for oil, once again the experts are saying "it can't be done" — overlooking the fact that new technology and discoveries could increase oil reserves, and could also reduce our present dependence on oil in favor of other energy resources. If the past is any guide, it may be wise to take such predictions with the proverbial grain of salt. ■