A Speed bump in the road?

"We are always facing Armageddon"

Peter Werbe
Chris Clark

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The following interview with Chris Clark, editor of the *Earth Island Journal*, publication of Earth Island Institute, was taped the week of January 18. I chose Clark to interview since he and his organization seem sensible in their theoretical and activist approach to defense of the environment. This may appear as an endorsement to some and a condemnation to others.

Earth Island Journal and the Institute can be reached at 300 Broadway, Suite 28, San Francisco CA 94133; (415) 788–3666; **www.earthisland.org**; or email at **journal@earthisland.org.**

Peter Werbe: Is there a potential for disaster at the stroke of midnight 2000?

Chris Clark: It is definitely a possibility. There's a lot of publicity about Y2K that concentrates on home and office computers, or the ones in state and federal agencies. But there's a whole class of computers called imbedded chips or systems which are much more crucial to the way this society functions, and haven't been getting as much attention. They're in your coffee machine or your bread maker or your fuel injection or the thermostat on the valve in the oil refinery five miles upwind. Or, any number of industrial or commercial processes that depend on managing numbers whether they have to do with temperature or time or the number of revolutions per minute of a motor.

Peter Werbe: If we're talking about coffee makers, it means inconvenience; if we're talking about industrial facilities, it could mean disaster.

Chris Clark: It's worthwhile to remember a couple of similar, but seemingly trivial problems that had horrendous results. One was potentially horrendous; the other purely horrendous. In 1980, the bank of computers at NORAD, the North American Air Defense, which is the organization that tells us if anyone is going to nuke us in the next 45 minutes, had one chip in one computer fail. That generated a phantom attack from the Soviet Union. It showed the Soviets had launched a massive nuclear missile attack over the North Pole.

I don't know who discovered that it was a chip failure and not a real attack, but whoever it was deserves to have the entire planet named after him. He saved the Northern Hemisphere from becoming a radioactive wasteland because the U.S. was just about to launch a retaliatory attack.

The other example is not a case of computer failure as far as I know, but is related to the issue. One valve in a chemical plant failed for 70 seconds, which is long enough for someone to notice something is wrong, jump out of their chair, grab a wrench and shut it. That valve failing at a Union Carbide plant in Bhopal, India in 1989 for one minute and ten seconds vented a deadly chemical which killed, blinded and maimed thousands of people.

Peter Werbe: Could something like that happen here because of the Year 2000 problem?

Chris Clark: Yes. Even though most of the embedded microprocessors used in industrial facilities aren't date sensitive, if even a fraction of the ones that are give bad data, it could be catastrophic. Trains could be sent onto the wrong tracks, refineries could miss toxic leaks, supertanker navigational systems could fail causing collisions or spills, chemical factories and incinerators dealing with toxics are similarly vulnerable.

Basically, the environmental impact of the Year 2000 problem is a result of the way in which we've built our society as a whole to be very brittle. There's nothing special about the click over to the three zeros except maybe in a totemic sense; people notice it.

Peter Werbe: Is the root of the problem just that the date will roll over and computers will see two zeros and get confused?

Chris Clark: That is one of the many things the computer might think, accepting for a moment that computers actually think. Half a century ago people who were writing code for computers—computer programmers—were faced with serious limitations. There was no such thing as cheap floppy disks, cheap memory cards that you could stick in your computer for $79 that would give you 64 megs of memory. Memory was expensive and very, very large; computer data storage was done on little paper cards. Any way you could cut corners as far as the amount of data that was stored, handled or processed would translate into saving lots of money over the course of a year.

One of the ways in which data was conserved is in the -way we do when we write checks. Instead of writing 1/19/1999, they write 1/19/99. Eliminating the 19s saved lots of money and time. Nobody in these big computer owning and leasing companies expected this code would still be in use forty years later.

Peter Werbe: You know the old expression, "If you're so smart, how come you're not rich?" I always stand it on it's head and ask if they're so rich, how come they weren't smarter?

Chris Clark: They were smart in terms of the next quarter earnings. There were engineers and programmers, my father among them, that were encouraging their bosses to take a look at the year 2000 problem as early as the late 1960s. They said, look, you're going to have problems with this; we can rewrite the code now so that we have four digit year fields for the date. Or, ignore the year all together using the number of days up to some point. There's a number of ways avoid the year 2000 problem if you have enough time. A lot of the code that's been written since the late '60s is Year 2000 compliant in that it will suffer no particular problem due to rollover—no greater problem than usual.

Peter Werbe: Most of the big corporations say they're taking steps to combat these problems.

Chris Clark: The good news is that the vast majority of these chips either won't have problems during Y2K because they're not date sensitive or will be fixed or replaced. The likelihood is that 99 percent of the embedded chips, we use in our daily and industrial life and global society will be either Y2K compliant or will fail benignly. The problem is that by the end of this year as a global society there will be 50 billion of these chips in various places throughout the world. So, even if a fraction of a tenth of a percent of these chips fail in a way that threatens human lives, that's a lot of failure we have to deal with.

Peter Werbe: What about the safety of nuclear power plants?

Chris Clark: The Nuclear Regulatory Commission is on record as saying they will shut down any noncompliant nuclear power plant soon enough to have them at cold shutdown by the time the calendar clicks over. They may have to shut down a third of them which a good environmentalist like me is supposed to cheer, but the energy grid in the Northeast U.S. gets 40 percent of its electrical power from these facilities. Still, I would much rather face power outages than a possibility of a meltdown.

However, two things happen; one is that the plants aren't producing electricity, but the other is that they are consuming it because it takes power to keep a plant at cold shutdown. That would mean the Eastern electrical grid would be running at a deficit of power. It could be fine for a couple of weeks, but if a cold spell or snow storm hits, the demand for power goes up; the system is already running a deficit, so you could have a blackout two or three weeks after the rollover. It's not going to happen magically at the stroke of midnight on January 1.

Peter Werbe: Is everything going to collapse? Are we facing Armageddon; something of catastrophic proportions or merely a disruption, of inconvenience?

Chris Clark: My glib answer is that we are always facing Armageddon. I'm not a psychic or a computer programmer; I don't have top level security clearance to get in to take a look at the Defense Department's state of compliance. I pay attention to people who have been talking about the subject and gauge how likely they are to be right. And, that's difficult; it's an odd issue. There's any number of self-appointed experts making pronouncements from one end of the spectrum to the other, and it's a question of who do you trust. Peter de Jager, who broke the story a number of years ago to the computer world-at-large had a recent article in Scientific American-talking

about the likelihood of what's going to happen. His medium view is that 15 percent of U.S. households may suffer power disruptions; worst case is 75 percent.

There's a potential for disaster, but my sense is that society is not going to collapse. There may be widespread disruption and I would be surprised if no one in the world dies as a direct result of Y2K related problems. We have so many people in the world and such a complex society that it is almost inconceivable to me that no one will be tragically affected. In places like North America, however, the sum total of many people's Y2K experience may be reading about horrible things happening somewhere else in a paper that gets there a day late.

Peter Werbe: What about response on the part of the population such as a run on banks for cash or panic buying of food or gasoline?

Chris Clark: I've been telling people that anything that doesn't seem like a good idea outside the context of Y2K isn't a good idea in the context of Y2K. I'm encouraging people over the next several months, not waiting until December 1, because that's when panic could set in, to set aside a couple of weeks to a month and a half of food.

Peter Werbe: That's kind of a bomb shelter mentality. Aren't the problems brought about by Y2K, the same ones that exist every day? The Bhopal disaster didn't happen at the year 2000.

Chris Clark: The problem is not the date, it's the data. We have constructed a society so vulnerable to disruption that two little insignificant digits can potentially bring it down.

In the long term, people have to think about how our lives depend on this very, very brittle system from power generation to our food supply to what we do for entertainment.

There are small ways we can cut our dependence on the big technically oriented system, from growing your own food to throwing solar panels up on your roof to generate power if you want to get off the grid. Things like this are good ideas even if Y2K is just a speed bump.

FE Note: This interview was originally aired on a radio show hosted by Peter Werbe on WRIF-FM in Detroit. The program can be heard worldwide on the Internet, Sunday nights at 11:00 pm, Eastern time, by going to **www.wrif.com** and clicking **Real Audio**.

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