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The Dragon Requires a Chain by Mike Gray

On the morning of March 28, 1979, I was sitting at my typewriter nursing a hangover when I got a call from Michael Douglas. He said, "Don't talk to the press. We don't want to look like we're exploiting the situation." I had no idea what he was talking about. Douglas said, "Turn on the news. There's been an accident at a nuclear plant in Pennsylvania."

We had just spent several years working on the screenplay for "The China Syndrome," a nuclear thriller that had premiered two weeks earlier, and when I clicked on the radio I knew the situation was serious. By now I was familiar with the catch phrases from previous close calls -- "Everything is under control. There is and was no danger to public health and safety" -- so I caught the next plane and joined the mob of journalists heading for Three Mile Island.

Over the next couple of years I dug through the evidence of the five commissions that investigated the accident and after talking to all the principals it became clear that the root cause was a serious design flaw in the plant itself. The government knew it, the designers knew it, they just forgot to tell the operators.

This "unplanned event" was set in motion by the failure of a \$20 check valve in a half-inch copper pipe. That minor incident led to a series of cascading failures that presented the men in the control room with a situation they had never seen before and had never been trained to handle. With key instruments gone haywire, flying blind, they made a couple of bad choices that destroyed the plant and released a still unknown amount of radioactivity into the air.

For several years, the wreckage of the reactor itself was too hot to approach so we didn't know how close we had come. But when the inspectors were finally able to lower a camera into the pressure vessel, the image was a heart-stopper. There was nothing left of the 150-ton uranium core but rubble. Parts of it had turned to liquid. Which means that at some moment on that fateful Wednesday, the reactor at TMI was within 30 minutes of the "China Syndrome" -- a melt-down comparable to the disaster at Chernobyl. Had it not been for a lucky operator who flipped a switch to see what would happen, the state capitol of Pennsylvania would now be a ghost town.

The accident at TMI brought a halt to nuclear powerplant construction in the U.S. In addition to the 67 reactors then in operation, another 150 were in the works. All were canceled. But now the Bush administration has put the issue back on the front burner with a call for 50 new atomic plants by 2020. The current world-wide scramble for dwindling oil reserves combined with the threat of global warming from our oil-powered economy is forcing us to take another look at good neighbor nuke. But before we hit the on-switch, we need to carefully consider the lessons

of Chernobyl and TMI: a nuclear plant is a caged dragon temporarily brought to heel. If it loses its fear of the whip, the consequences are monumental.

Unfortunately, neither the government nor the plant owners seem to have taken the lessons to heart. Management self-delusion -- "It can't happen here" -- seems as pervasive as it was that spring day 25 years ago in Pennsylvania.

Consider, for example, the recent close call at Davis-Besse, a Three Mile Island sister plant outside Toledo. The owner -- First Energy -- is the same company that caused the East Coast blackout by avoiding routine maintenance on their power lines. This bottom-line attitude also infected their nuclear operations. In the fall of 2001, plant inspectors spotted evidence of a coolant leak on top of the reactor vessel, but the company saved a few million dollars by stalling the investigation until a scheduled refueling shut down six months later. When they finally pulled the cover to take a look, they discovered a hole in the reactor head the size of a cannon shell. The only thing between the core and catastrophe was a thin steel liner -- bowed out like a balloon and ready to pop.

If we were to make another run at nuclear power, we'd have to figure out how to keep Homer Simpson out of the control room and Mr. Burns out of the front office. At a minimum it would call for military discipline, standardized designs, and centralized control. The U.S. Navy has a far better record with their reactors than private industry, largely because the navy doesn't answer to stockholders, and the captain is responsible no matter what.

Above all, the worst-case scenario would have to be front and center in the planning because Murphy's Law turns out to be as immutable as the laws of physics. If something can go wrong, it will.

Mike Gray wrote the original screenplay for "The China Syndrome." A new edition of his book, "The Warning: Accident at TMI," was just released by WW Norton.