

Scientific Misconduct at the New York Times: Distorting Routine Science to Sell Newspapers

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Earlier in 1995, it was alleged that the planned nuclear-waste repository at Yucca Mountain might blow up like an atomic bomb. The New York Times led the way in hyping up this story, which was utterly without scientific merit. The Times hid behind the usual excuses that newspapers give for resorting to sensationalism, but in fact their writers had the scientific background necessary to see through the errors. They published the hyped-up story anyway, and in so doing committed an act of scientific misconduct.

The history of this case was reviewed in detail in Science magazine [Science 238, 1836-1839 (30 June 1995)]. It deals with the controversial matter of storing nuclear waste.

The issue originates in nuclear physics: in a nuclear reactor, the uranium fuel gradually is transmuted into other elements, one of which is plutonium. Every 18 months or so, the old fuel rods are removed and replaced with fresh ones. The spent rods contain some isotopes of plutonium that decay quite slowly, with a half-life of 24,000 years; the result is that they cannot simply be thrown away. In fact, they have to be guarded and kept out of the hands of terrorists, who could extract and concentrate the plutonium to make atomic bombs. Back in the 1960's, it was expected that spent nuclear fuel rods from reactors would be reprocessed, but by the 1980's it was deemed better to bury them permanently. Meanwhile, ever since the first reactors began operating in the 1960's, their spent fuel rods have been stored on-site, in "swimming pools" (surrounded by water) where they slowly cooled and their radioactivity diminished. Obviously the on-site storage would run out someday, and hence the need for a permanent repository.

In 1987, after several years of "not in my back yard" wrangling from various parts of the country, the extremely remote Yucca Mountain Nevada was selected as that permanent burial site. Since Nevada had long been the site of nuclear bomb tests, this decision bothered very few people outside of Nevada. More recently, design and construction got underway at the site, with the expectation that it could begin accepting spent fuel rods a few years from now. Still, opponents of the project continued to look for any excuse to kill it.

Meanwhile, an alternate way to get rid of long-lived isotopes quickly is to bombard them with neutrons. That is what happens inside a reactor. A technique known as Accelerator Transmutation of Waste (ATW) is one variant of that process. Nuclear technology is no stranger to competition, and it is relevant to note that any impediment to the idea of permanent burial would act to promote research on alternatives such as ATW. At Los Alamos National Laboratory, with research funding under downward pressure, the developer of ATW (Charles Bowman) began to speculate about what could possibly go wrong at Yucca Mountain.

Bowman came up with the idea that if the plutonium in the permanent repository could leach out of the glass logs in which it was originally stored, and travel through the surrounding rock, then it might concentrate enough in one place to form a "critical mass." A "critical mass" means an active reactor, and without any control and under further very specialized circumstances, Bowman hypothesized that it might blow up. A series of highly unlikely "ifs" were strung together to produce this scenario.

Recognizing that such a scenario, if true, would make permanent storage impossible, the management of Los Alamos National Laboratory gave top priority to analyzing the scientific merit of Bowman's speculations. Three independent teams were assigned to review the hypothesis from distinct viewpoints and motivations: one team to attack the theory, one to promote it, and one neutral team. It is immensely to the credit of management that they didn't just summarily dismiss the idea as a "crackpot theory", a strategy one might expect from a government agency trying to protect a decision already made. After some weeks of study, all three teams (even the one assigned to advocate the theory) found Bowman's concept scientifically indefensible. Some of the estimated numbers needed for the hypothesis were wrong by a factor of a million. The clear, unified scientific conclusion was that "the probability of [the] explosion hypothesis being realized was 'essentially zero'." reliable scientific method having been applied correctly. However, scientists forgot that newspapers always like to sell a few more copies, and that is where the story of scientific misconduct begins.

Needless to say, word of the study leaked out, and draft copies of manuscripts reached the New York Times science writer, William J. Broad. Actually, Broad is an adequately intelligent scientist who used to write for Science magazine, and who certainly was able to understand the technical arguments being presented. He pretended not to, publishing an article (front page, on Sunday, March 5) that gave equal weight to both the Bowman hypothesis and its critics, and suggested that an important debate was ongoing, with obvious major implications for the Yucca Mountain project. The New York Times science editor, Nicholas Wade (also a former writer for Science magazine) defended the sensational article on the flimsy grounds that newspapers are supposed to report on disputes among experts. What the Times deliberately ignored was that there was no longer any dispute; the issue had been settled, fairly and openly, using the full process of scientific peer review.

Major damage was done very quickly: the next day, Senator Richard Bryan of Nevada accused the Department of Energy of a dangerous cover-up. Subsequently, Senator Bennett Johnston of Louisiana had the entire “neutral team” report entered into the Congressional Record. Unfortunately, the public never reads the details. The attendant adverse publicity may well kill the Yucca Mountain project, which of course is exactly what Nevada would like to do. In the intervening months, the subsequent release of additional independent reviews showing that the Bowman hypothesis is wrong have done little to comfort a wary and worried public.

We now have a situation where the name Yucca Mountain can be added to the list of Alar, Radon, Asbestos and related topics where hype drove out careful science, and public fears were exacerbated needlessly by screaming headlines. No amount of future clarification can remove this “bomb scare” strategy from the litigants who want to block the project. They will be able to muddy the water at every public hearing by resorting to this canard. Expenditures (so far up to nearly \$2 billion) will probably double, if the project is ever completed at all.

To gleefully wreak this kind of mischief is nothing short of scientific misconduct. It ranks alongside Piltdown Man and the Cyril Burt twin-studies as examples of lasting damage perpetrated for no better reason than personal aggrandizement. For Broad and Wade, it would be appropriate punishment if their colleagues in the American Physical Society were to expel them from membership. They should not be permitted to hide behind journalism slogans which publishing stories they knew to be wrong. And certainly no one should ever believe anything they write again. Perhaps the message would not be lost on other aspiring sensationalists.

This behavior by the New York Times is damaging to the proper conduct and review of scientific research; but more important, it displays the Times total contempt for the intelligence of their own readers. On a slow news day when no “Aliens Capture Elvis” stories were available, the New York Times reached deep into the scientific wastebasket to hype up a story that few would understand, but many would become alarmed about. The final message for one and all is that the New York Times is by no means the bastion of sound reporting and faithful adherence to the search for truth that it would have us believe. In reality, the New York Times is just another yellow-journalism rag who will abandon objectivity in order to sell newspapers.

NOTE

In the August 11, 1995 issue of Science there is a short note indicating that the National Research Council released a congressionally mandated report on disposing radioactive wastes at Yucca Mountain. That report concluded “that researchers would likely have to predict the state of Yucca Mountain hundreds of thousands of years from now.” Currently, the Environmental Protection Agency requires that a repository meet safety standards for 10,000 years.

The NRC report states that very long range forecasts are feasible because the Yucca Mountain region is likely to be stable for the next million years.

I suppose from any kind of lay view, the question would be: why are we worrying about something that far into the future. We have absolutely no assurance that there will be human life on the planet or, even more radically, we have no assurance that the planet will be here. Furthermore, we seem to assume in this time frame that what-

ever humans there are will be so like us that they will not be able to handle our radioactive wastes. In reality, for all we know now, they may well curse us for having made it so difficult for them to get this most highly prized commercially valuable material. Why do we worry about even a thousand years into the future? It's like the Romans worrying about their sewer system because 20th Americans would worry about it.