Warnings

Technological Failures vs Mal-Ecology

by Garrett Hardin

The single issue of *SCIENCE* for 13 December 2002 (vol. 298, no. 5601) has, on two separate pages (2097 and 2107), reports that together epitomize one of the fundamental barriers to getting across to the public the needed "feeling" for environmental perils.

The collapse of the Tacoma Narrows suspension bridge in 1940, just four months after its completion, is shown in the classic photo on p.2097. No lives were lost and its collapse was photographed by engineering professor F. B. Farquharson who just happened to be there.

Photo: www.lib.washington.edu/specialcoll/tnb (PH 290.36)

In the aftermath many theories were discussed concerning the cause of the bridge's collapse. Ultimately an investigative board for the Washington State Toll Bridge Authority announced the failure was due to the bridge's design reacting to the wind in the Narrows. The move to replace it with a bridge of better design for this windy location began immediately. The job was completed in ten years and the lessons learned were applied to bridge constructions thereafter.

On page 2107 of *SCIENCE* is found an account of the foulest of the London fogs over a weekend just fifty years ago in December of 1952. It was first estimated that 12,000 human deaths were caused by the sulfur-laden clouds. By 1953 the Ministry of Health had reduced the estimate to 3,500 to 4,000 deaths to be charged up to this calamity. Often flu or a similar sickness contributed to the recorded deaths. The problem of multiple causes is a difficult one to crack with statistics. Researchers now say as many as 8,000 deaths, adding fatalities in early 1953, could be attributed to the "Big Smoke."

The comparison — not made by the editors of *SCIENCE* — illuminates a major problem of ecology. Technological disasters are easy to evaluate, or to be convinced of. But slow and dispersed effects evoke differences of opinion. The downfall of Easter Island, caused by population growth outrunning resources, has been duplicated on a larger scale by many other nations, but so slowly that most of their inhabitants have poorly understood what was happening.

At the present time, China, with a quarter of the world's population, seems the likeliest candidate for an early ecological downfall.

Will we notice? …*In time?* •

[Editor's note: Other examples include immediate benefits that were followed by delayed deleterious effects: the use of DDT; the quadrupling of human population in the twentieth century, accompanied by a 16-fold increase in energy consumption; the globalization of trade followed by globalization of diseases like West Nile virus and pests like the zebra mussel. Will we notice?]

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