COLUMN

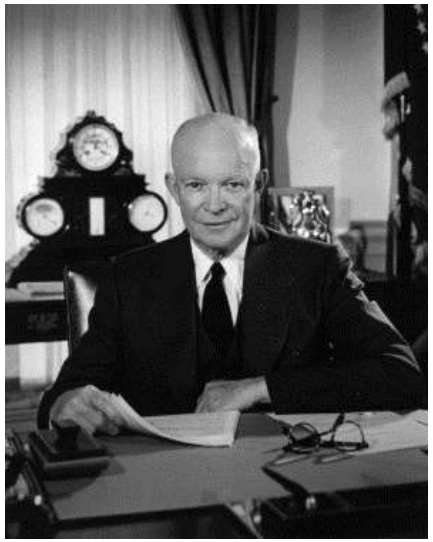
Hazy reasoning behind clean air

Science alone can't determine how regulations are written, argues **David Goldston**.

Hazy reasoning behind clean air **David Goldston,** Nature 452|3, April 2008

'Science alone can't determine how regulations are written'

[…] EPA's science panel found that "quantitative evidence […] must … be characterized as having high uncertainties." What to do in the face of uncertainty is a policy question, not a scientific question. [..] The debate is about […] what kinds of uncertainty can be tolerated as a basis for decision-making.



Eisenhower's Farewell Address to the Nation January 17, 1961

http://www.informationclearinghouse.info/article5407.htm

Today, the solitary inventor, tinkering in his shop, has been overshadowed by task forces of scientists in laboratories and testing fields. In the same fashion, the free university, historically the fountainhead of free ideas and scientific discovery, has experienced a revolution in the conduct of research. Partly because of the huge costs involved, a government contract becomes virtually a substitute for intellectual curiosity. For every old blackboard there are now hundreds of new electronic computers.

The prospect of domination of the nation's scholars by Federal employment, project allocations, and the power of money is ever present – and is gravely to be regarded. **Yet, in holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger that public policy could itself become the captive of a scientific-technological elite**.

RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT
Rio de Janeiro, 3-14 June 1992

Principle 15

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The Scientist Qua Scientist Makes Value Judgments

Richard Rudner

Philosophy of Science, Vol. 20, No. 1 (Jan., 1953), pp. 1-6

…clearly the scientist as scientist does make value judgments. For, since no scientific hypothesis is ever completely verified, in accepting a hypothesis the scientist must make the decision that the evidence is sufficiently strong or that the probability is sufficiently high to warrant the acceptance of the hypothesis. Obviously our decision regarding the evidence and respecting how strong is "strong enough", is going to be a function of the importance, in the typically ethical sense, of making a mistake in accepting or rejecting the hypothesis.

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Weinberg A M. Science and trans-science. *Minerva* 10:209-22, 1972.
[Oak Ridge National Laboratory, TN]

Origins of Science and Trans-Science

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time [illegible] was becoming involved in the debate over nuclear power—in particular the debate over the hazard of low levels of radiation.

such [illegible] Brooks suggested that an analysis of such situations was beyond the power of mathematics, and therefore, was trans-scientific.[2]

The term "trans-science" is used quite widely now. Perhaps most notable was W. Ruckelhaus's admission in 1985 that many of the EPA's regulations hang on the answers to questions that can be asked of science but cannot be answered by science—i.e., are trans-scientific.[3]

After the paper was published, Harvey Brooks added another dimension to "trans-science"—the evolution in time of systems governed by large classes of nonlinear equations. [illegible]

mits of science. *Proceedings of the Symposium on Phenotypic*
ssment, December 7-10, 1986. Brookhaven National Laboratory.

Minerva 10:484-6, 1972.
Technol. I:19-38, 1985.
4. Wagner W G. Trans-science and torts. *Yale Law J.* 9:428-49, 1986.