

Nick Doe, *Science important in risk assessment*, The Flying Shingle, p.6, July 4, 2011.

Michael Mehta in his essay on risk (*Shingle*, June 20, p.8) [quoted below] offers much that is debatable, and much that I simply don't understand. He says: "one of the consequences of orchestrating debates about risk using principles of analysis that mirror logico-deductive modes of inquiry is that alternative forms of knowledge carry little or no weight". Nor should they. All the "alternative" forms of knowledge I am aware of imply "knowing" something without there being any evidence for it. Pseudo-science, guessing, faith, and uninformed opinion should have little place in the process of assessing the risks posed by adopting particular technologies.

To elaborate on his "alternative knowledge" theme, Mehta says for example that "the technically-oriented way of conceptualising risk requires that decision-makers, and members of the public, trust scientific authority and expertise". He apparently discounts the possibility of decision-makers being sufficiently educated that they can make use themselves of "logico-deductive modes of inquiry". If Mehta did not mean this, why does he say that (if we trust scientific authority and expertise) "the power of public decision-making will shift from politically responsible authorities to those who best grasp the technical issues associated with a particular hazard"?

Mehta comes across as being fearful. The message appears to be if you don't understand the science, don't trust the scientist, as if scientists were "different" from "ordinary" people. Of course the science should be challenged. Scientists do that all the time. But surely, if you are afraid, isn't the appropriate response to take the time to learn some of the science and listen to what the scientists have to say. We live in a technological age and if you don't understand the technology, you cannot expect to be in full command of the implications of its application.

No scientist or engineer would ever suggest that a science-alone approach is sufficient, but to suggest that the science-alone approach should therefore be shunned is like recommending that if you offer a carpenter a tape measure, the offer should be declined because the carpenter also needs a sharp pencil.

People's perception of risk is often different, often wildly different, from what the evidence says. People will accept risks a thousand times greater if they are voluntary than if they are involuntary. Studies have shown that risks that are understood are judged less serious than those that aren't. People also assess risks to be lower when they are in a positive emotional state. People often consider risky, activities that have shown absolutely no evidence of being so.

If science is, as Mehta claims, "...a social enterprise, and scientists are human actors" and that "it is important to note that relying upon such advice without recognising how it is shaped by values is folly", how much more so can this be true of a non-scientific "alternative" way of evaluating our use of technology in order to better our world. It isn't scientists who are not heeding the warning that we are running a severe risk of wrecking the world with our fossil-fuel policies, its decision-makers and members of the public who insist on the assessment of the risk not being "exclusive".

Regards

Nick Doe

## BACKGROUND

Dr. Michael Mehta, *Toward an understanding of risk*, The Flying Shingle, p.8, June 20, 2011.

In recent years risk has become a topic of intellectual, political, and social interest. Rarely does a day pass without some coverage of risk issues by the mass media (e.g., cellular telephone emissions, nuclear fall-out, terrorism).

Risk may be defined as the probability of adverse outcomes multiplied by consequences. Technically, the word “risk” refers to situations in which a decision is made the consequences of which depend on the outcome of future events having known probabilities.

For example, the decision to build or re-licence a civilian nuclear power plant involves comparing the risks and benefits associated with this energy source to other sources (e.g., coal, hydro-electric, natural gas, wind) by assessing the veracity of certain assumptions about future impacts on human health, environment, energy security, etc.

Since risks are ubiquitous, risk management is a series of processes for minimising the probability of exposure to a hazard and the degree of adverse outcomes flowing from such exposure. Within the context of environmental and human health risks, such management considerations focus on the interface of science and policy, and ultimately involve specifying the design of this interface so as to increase accountability, transparency, strategic vision, participation, and equity.

In seeking to overcome or manage such risks, democratic societies are obliged to preserve certain fundamental values, such as a citizen’s right to comprehend and to take part in governmental decision-making. Since risk evaluation is essentially a social process, and all risk assessments are value-laden, risks must be managed with recognition that a science-alone approach is incomplete since it ignores many of the ethical and social issues that accompany new technologies.

By embracing technical definitions of risk issues, the language of political debate often becomes specialised and has the appearance of being scientifically objective and value-neutral. Since science is a social enterprise, and scientists are human actors, it is important to note that relying upon such advice without recognising how it is shaped by values is folly.

As well, the widespread requirement for specialised knowledge in the assessment and management of technologically generated risks raises the concern that the power of public decision-making will shift from politically responsible authorities to those who best grasp the technical issues associated with a particular hazard.

As a concept, risk can be used to understand contemporary political conflicts. Risk conflicts are essentially political conflicts where an appeal to folk wisdom and common sense, taking into account historical precedence, is more likely to satisfy a majority of the population than an approach where technical expertise defines the language of political debate, and technocratic procedure channels it.

The technically-oriented way of conceptualising risk requires that decision-makers, and members of the public, trust scientific authority and expertise. Furthermore, there must be a willingness to limit boundaries of analysis so that risks can be compared quantitatively to one another in a rational and de-personalised manner.

Although not directly linked to the erosion of democracy in post-industrial societies, a reliance on a technically-oriented approach to risk assumes that liberal, individualistically oriented policy-making cannot deal with modern, communal risks. Furthermore, such an approach assumes that the production and distribution of risks are independent from economic and political forces and from public consultation.

The presence of modern-day risks heightens the necessity of rights-based democracy, and requires a renewed commitment to equal rights in public dialogue and enhanced citizenship rights within a participatory, communal, and cooperative decision-making environment. Such an environment would evaluate risk in terms of its political and social consequences, such as possible disruptions in the social fabric, rather than by considering exclusively a hazard's possible effects on human health and environment.

This alternative form of decision-making is aptly illustrated by a concept of risk that is sensitive to social constructions of reality and an understanding of reality through scientific knowledge. Like all social reality, risks are socially constructed to a certain degree. In other words, all reality, ideas, and meanings (including ideologies) are socially constructed.

One of the consequences of orchestrating debates about risk using principles of analysis that mirror logico-deductive modes of inquiry is that alternative forms of knowledge carry little or no weight. As such, risk becomes a tangible product that can be sold, traded, or re-defined according to the will of politically active members of society who have access to scientific legitimation.

In conclusion, the rise of environmentalism, a growing number of arguments for appropriate, manageable technologies, and increasing antipathy toward social institutions are, in part, by-products of this struggle between competing risk paradigms and their respective supporters. Such conflicts suggest that debates about risk are not, in essence, scientific disputes. They are arenas of social conflict in which a poorly articulated debate about values and visions influences the distribution of economic and political power, and highlight the importance of good risk-management practices. ◇