

Transnational Differences in Ethical and Regulatory Standards

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I. Introduction

Engineers have been subject to explicit government regulation of their activities because they design and guide construction of physical structures used by other people and located in places where their decay or collapse could pose dangers to non-users as well. As long as the effects of laboratory accidents remained confined within the lab itself, there was less concern about scientists' daily activities. This changed in the 20th century as concerns about disposal of toxic substances, concerns about the possibility of germs spreading out from laboratories, or fears that genetically modified plants allowed in open fields would contaminate other areas increased. Today both engineers and scientists find their activities governed by a range of regulations meant to protect the public from various hazards. Scientists and engineers working in transnational collaborations, or in countries other than their own, need to be aware of the ways in which regulatory responses can differ. Some of these differences stem from variations in the perceived acceptability of an activity in different cultures. Others stem from different approaches to the common problem of identifying and regulating hazardous activity. Yet, others stem from differences in reaction to scientific or technological breakthroughs.

II. Differences in Social Mores inspiring Regulatory Standards

Different societies may define the same activity in starkly contrasting ways, one regarding it as acceptable, another as dubious, and yet another as morally abhorrent. In 1997, an unidentified technician at the French satellite TV broadcaster France Telecom got his company into considerable trouble by inadvertently shifting a sexually explicit movie intended for audiences in French Pacific Island territories onto a channel sending the signals to Saudi Arabia and the Gulf where the broadcast caused outrage.¹ Homosexual relationships are another area of strong contrast, treated as acceptable in some societies, as dubious in others, and as so morally abhorrent that they are a crime punishable by death in others.²

¹ A Saturday night surprise for the Saudis" *The Economist* 26 July 1997 p. 39

²According to an activist organization, the International Gay and Lesbian Human Rights Commission, at least 80 countries define same-sex sexual relations as crimes. See "IGLHRC Commentary: End the criminal treatment of GLBT people" at <http://www.iglhrc.org/cgi-bin/iowa/article/pressroom/iglhrcscommentaries/929.html> (accessed 1 July 2009).

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Most moral differences have little effect on the conduct of science or engineering, but some can have major implications if a particular moral precept is regarded as directly relevant to organizing scientists and engineering activity. Many Christians and social conservatives in the USA object to scientific research using human stem cells derived from embryos because the stem cells cannot be secured without destroying the embryo. A strict interpretation of their belief that human life begins at the moment when sperm penetrates egg logically entails the conclusion that intentionally destroying embryos is equivalent to murder. The George W. Bush administration, which had considerable political support from conservatives sought to finesse the conflict developing between that bloc and Republican moderates who supported stem cell research by restricting federal research funding to work on embryonic stem cell lines already developed before 9 August 2001. The rule meant that unless they could get funding elsewhere, US researchers had far more limited choices of material than their colleagues in other countries. The limits were even more restrictive than Bush thought because of the “more than 60” stem cell lines he thought were ready for use, only 22 had been fully developed and leading scientists regarded many of those 22 as having limited usefulness.³

III. Variations in Regulating Hazardous Activity

Different societies may agree that the same activity is hazardous to other humans or to the environment, but regulate it in divergent ways. Regulations can range from prohibiting the activity entirely, allowing it only in particular circumstances, requiring those who engage in the activity to take special measures to reduce hazards, or discouraging the activity through provisions of liability law.

Completely banning an activity is most likely when its hazards are perceived as severe and its benefits as marginal. Pressed by vocal citizen groups and environmentalist movements, the governments of major industrial countries have banned a significant number of human-created chemicals because their toxic effects are seen as greatly outweighing any benefit of using them. However, bans on using particular chemicals apply only within the territory of the country or countries adopting the ban. As long as use of the chemical is legal elsewhere, chemical makers could manufacture the banned chemical for export. Chemical companies supplying foreign markets usually succeed in staving off efforts to ban manufacture as well as use by arguing that banning manufacture will favor foreign companies not subject to a ban on manufacturing, thereby reducing local income and/or jobs.

That a chemical banned in some countries is not banned in all may reflect political or physical conditions. Many governments lack the scientific and administrative resources to test chemicals for toxic effects, but can compensate for that by observing regulatory trends elsewhere and banning any chemical after one or more industrial states with extensive testing capacity has adopted a ban. The problem of keeping track of bans has been simplified as developing country governments unhappy about what they perceived as the dumping of now-banned chemicals on their countries' markets sought to use their majorities in UN Bodies to secure international agreements that would allow them control of cross-border sales of toxic chemicals. The first result was the UNEP International Register for Potentially Toxic Chemicals, which included information about chemical hazards and listings of chemicals that had been banned or subjected to use restrictions. This was later linked to voluntary (1987-) and Mandatory (1991-) systems of securing prior

³ Chris Mooney, *The Republican War on Science* (2005), pp. 2-4 and 185-204.

government permission for imports of chemicals on the Register. The Register became more useful over time, first as an FAO/UNEP Joint Group of Experts was established to provide technical guidance for compiling of lists of banned or restricted chemicals and coordinated the process of developing the Decision Guidance Documents that indicate the types and severity of hazards posed by chemicals included on the list of those requiring import permits.⁴

Differences based on varying perceptions of particular chemicals' usefulness remain. The ability to kill a wide range of pests that made the chemical dichlorodiphenyltrichloroethane (DDT) attractive in the 1940s became perceived as a serious problem in the early 1960s, and it was banned in most industrial countries by 1980. Developing states were slower to ban DDT, not merely because environmental movement influence was lower but also because of the chemical's perceived usefulness against malaria-carrying mosquitoes and in agriculture.⁵

Sometimes debates about the hazards of an activity lead to regulations limiting the activity rather than a complete ban. This may occur because the activity or product remains the best available choice for particular uses. Bans on adding tetraethyl lead to enhance combustion of gasoline (petrol) used in land transport were adopted in North America in the 1970s, most parts of Europe in the 1990s, and in China in 2001 because substitutes were available, however a newer "low lead" formulation remains the primary additive in 100 octane aviation fuel because a cost-effective substitute has not been found. Other ban proposals fail because of objections on other grounds. Until the hazards of exposure to tobacco smoke from other people's cigarettes and cigars were firmly demonstrated, efforts to ban smoking foundered on objections that they would interfere too much with individuals' lifestyle choices. Even with better understanding of hazards, bans cover only enclosed public spaces.

Societies can react to perceptions of hazard by subjecting an activity to special regulations and/or requiring that those engaged in it have particular training. Training standards may be reinforced by a system of government licensing for individuals seeking to carry on an activity. Engineering is a licensed profession in most countries of the world; not only must aspiring engineers be trained in schools of engineering accredited by national engineering societies; they must pass government-administered tests and meet other experience requirements. An engineer whose work or inattention is identified as contributing to a major structural or process failure is likely to lose the license. Scientists are not directly licensed, but the scientific community insists that newcomers have training in accredited academic programs; laboratories are also covered by any general or specific requirements regarding abatement of hazards to persons and the environment in force where the lab is located. Social sensitivities about lab hazards have grown since the mid 20th century, and scientists are now more aware of need to take public views into account. Awareness of public unease and concern that governments might regulate the work out of existence induced the world's leading genetic scientists to observe a moratorium on genetic modification research

⁴ See David Victor, "'Learning by doing' in the nonbinding international regime to manage trade in hazardous chemicals and pesticides," in David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff, eds. *The Implementation and Effectiveness of International Environmental Commitments*, 221-281. Cambridge: MIT Press, 1998.

⁵C.F. Curtis, "Should DDT continue to be recommended for malaria vector control?" *Medical and Veterinary Entomology*, Vol. 8 (2):107-112 (1994).

while they examined the hazards of such work and developed global standards for reducing those hazards as much as possible in 1974-1975.⁶

Liability law can be used to discourage particular activity in several ways. Imposing a standard of “strict” (sometimes called “absolute”) liability requiring those who engage in a particular activity responsible to repairing or provide monetary compensation for any and all damage it causes to others or their property. Imposing this standard automatically increases the cost of insurance because it exposes the doer to more claims than the more usual conditional liability standard that requires repair of or monetary compensation of harm only when a) the activity violates another person’s rights, b) the harm is inflicted intentionally, or c) the harm arises from negligence in conduct of the activity.⁷

IV. Variations in Reaction to Scientific or Technological Breakthroughs

Differences in social presumptions regarding new activities can also produce different reactions to the same scientific or technological breakthrough. A significant portion of the US-EU argument about sale of plants bred with genetic modification techniques and foods containing ingredients from such plants stems from differences in the assumptions used to guide policy formulation in each area. In the EU, plants created through genetic modification are regarded as significantly different than those developed by grafting, hybridization, and other previously-developed techniques for selective breeding; they may not be grown in fields or used as human or animal food unless such use has been specifically approved. Thus, the EU’s basic policy guideline is “prohibited unless specifically permitted.” In the USA, plants created through genetic modification techniques are regarded as “essentially similar” to those developed by older methods of selective breeding and may be grown and used in food unless proven to be hazardous. Thus, the USA’s basic policy guideline is “permitted unless specifically prohibited.” If national food markets were completely distinct, with EU countries meeting all their food needs from within the EU, and the USA meeting all its food needs from within the USA, the difference in regulatory standards would pose no particular problems. US farmers would follow US standards, European farmers would follow EU standards, and each would only sell at home. However, national food markets are linked. The difference in regulatory assumptions means that many US products are unacceptable in the EU while all EU products are acceptable in the USA. European farmers can export more to the USA than US farmers can export to EU countries, and this difference in trade opportunities has been the source of serious contention between the EU and the USA.

Significant differences in major countries’ regulations require persons or firms in third countries who want to export goods covered by the divergent regulations to decide which set of regulations to meet. Farmers or food processors in third countries who want to export to Western industrial countries might decide to cater to one market and not the other, opting to follow either EU or USA standards. If they want to export to both markets, the logically simplest choice is to meet the more restrictive standards since anything meeting more restrictive standards will automatically meet less restrictive ones. Following this logic, they would grow only those genetically modified plants approved for sale in the EU. Whether third country suppliers follow this logic depends on two factors: a) the extra cost (if any) involved in meeting the stricter regulations

⁶Paul Berg and Maxine F. Singer. “The recombinant DNA controversy: Twenty years later,” *Proceedings of the National Academy of Science* 92: 9011-9013 (Sept. 1995)

⁷ Basic concepts are summarized in Edward J. Kionka, *Torts in a Nutshell* (Minneapolis, MN: Thompson/West, 2005).

and b) whether opportunities to export to the country or countries with the most restrictive regulation are great enough to make altering production to meet the more restrictive standards worthwhile.

Decisions about which importing country regulations to satisfy pervade major industries. For years environmentalists argued that division of the world into more than 200 states each making their own regulations would always trigger a “race to the bottom” in which companies would locate their production in the countries with the least regulation on ingredients put into products and of pollution created while making them, and those regulations would set the global tone because governments of other countries would fear losing industries to the weak regulation countries. More recently, analysts of government regulation have noted that it is possible to set up a “race to the top” regarding ingredients and product performance if the governments having the strictest regulations rule countries whose domestic markets account for a large share of world sales.⁸ Large domestic markets mean that product performance standards set by the USA and the EU have been particularly influential; standards set in Japan, China, India, and Brazil are also becoming more important as people in those countries become wealthier and can buy a wider range of products.

Study Questions

1. What are the sources of differences in standards?
2. What are the different ways societies can deal with activity regarded as hazardous? Can you give an example of each of the different responses?
3. Companies, organizations, and individuals operating in more than one country can deal with differences in standards by choosing to carry out activity where regulations are least demanding, adapting activity to the rules in each location where it occurs, or following the demanding regulations everywhere. Can you give an example of a company’s or organization’s choice when faced with different regulations?

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⁸ Within the USA, where state governments have authority to set product performance standards in many areas, this pressure for satisfying tight regulations is known as “the California effect.” Consumers in that state form about 20% of the US domestic market, and California has adopted particularly strict regulations in a number of areas. See David Vogel, *Trading Up: Consumer and Environmental Regulation in a Global Economy*, Cambridge, MA: Harvard University Press, 1995.