



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Ethical Issues Facing the Food Industry

by

Paul B. Thompson
Center for Biotechnology
Policy and Ethics
Texas A&M University
College Station, TX

The array of ethical issues facing the food industry is extensive. It includes fair and just treatment to food industry employees, especially as disproportionate numbers of minorities take jobs in food processing and food service. Issues of food distribution and hunger continue to be important. In the calendar year 1992, however, these issues pale in comparison to those raised by food safety and labeling. The impetus for this issue is multiple. The Nutritional Food Labeling Policy Act has mandated new labels intended to provide consumers with consistent information on ingredients that will be useful in dietary planning. Questions over labeling of foods derived from the transfer of genetic materials are being asked by regulators, the food industry and by consumer advocates. The so-called "Delaney paradox," has raised questions about the ethics of limiting risk from additives, while risk associated with whole foods is unregulated. At the same time, lingering questions about risk from pesticide residues and microbial contamination frame a continuing debate over food safety, one which frequently returns to labeling as a strategy for addressing consumer concerns.

The balance of this paper outlines a framework for policy analysis, and demonstrates how ethics bears upon each element of the framework. Contested issues in food biotechnology policy are used to illustrate the applicability of the framework for interpreting policy conflict. Although this approach addresses several of the key points

where ethical concerns bear upon food biotechnology, the paper makes no attempt to survey the full range of ethical concern. What is more, the paper does not present a normative argument favoring one policy option rather than another. The idea that ethics requires a particular set of policies for food biotechnology is *not* argued in this paper. Instead, the purpose is to examine how ethical arguments establish a burden of proof for policy evaluation. The thesis is that effective policy making requires an ability to understand how different types of ethical criteria bear on policy. Insensitivity to contrasting ethical approaches will only prolong policy conflict.

The framework is then brought to bear on the question, "What ethical considerations should be brought to bear on labeling policies for food products?" This question does *not* equate labels with warnings. There are many ways to configure a labeling policy that do not imply health claims. The short answer to the question is that there are two kinds of ethical considerations. The first has to do with the use of labels as tools to produce ethically desirable ends such as good health and consumer satisfaction. The second has to do with the role of labels in protecting the principles of consent. While these two ways of evaluating labeling policies may converge, they may also indicate contradictory directions. The long answer to the question uses a general approach to ethics and policy to show why this is the case.

A Framework for Policy Analysis

Schmid (1987) presents a theoretical framework for policy analysis where the laws, procedures and administrative decisions that seem to be instruments of policy are analyzed in terms of the incentives they create for key actors. Schmid's framework develops a public choice/transaction cost approach to public policy that permits an analysis of how informal norms and standard operating procedures interact with the formal apparatus of law and administrative decision making. Conventional economic policy analysis assumes that a policy's costs and benefits can be computed simply by examining the impact of laws and administrative decisions upon production costs and consumer demand. Here the key insight of Schmid's approach is that the formal policy apparatus is one component in an ensemble of laws, norms and standard operating procedures. The totality of this ensemble imposes a *structure* upon an existing reality, and the combination of structure and the *situation* as determined by physical and biological facts determines individual incentives and opportunities. According to Schmid, economists have naively assumed that individuals' behavior is shaped merely by preference rankings of exchangeable goods and have failed to examine how shared norms and public policy shape opportunities for choice.

For purposes here, Schmid's framework will be telescoped into four key elements. They are defined here with explicit attention to the analysis of food safety and nutrition policy.

1. *Situation*: the things that cannot be changed. This should be understood to include the physical, chemical or biological processors that determine food production and consumption.
2. *Structure*: the ensemble of laws, shared norms, procedures, and rules that are either proposed or in place in the status quo. In addition to the obvious elements of policy, structure includes norms that govern what people regard as food.
3. *Conduct*: the behavior that will be produced as a result of the opportunities created when a given structure is imposed upon the situation.

Conduct includes the production, processing distribution, and consumption of food.

4. *Performance*: a given pattern of conduct will produce an end state which consists of the policy's consequences for affected parties. Health, disease, injury, profit and loss all qualify as components of this end state. (Schmid, Shaffer and Van Ravenswaay, 1983)

The framework provides general categories that allow a competent analyst to bring implicit features of policy out more clearly, and to examine how policies produce end states. It is admittedly quite general and is undoubtedly commensurate with many different methods of policy analysis.

It is worth noting a few additional points before examining how ethics bears upon the framework. First, the framework is interpretive in that it will require judgment to assign specific variables to any of the four elements. For example, the technology that is used to detect the presence of a substance in foods uses physical and chemical principles. Technology is, in that sense, a part of the reality or situation on which a structure is imposed. However, this technology has changed so dramatically in the past four decades that it is probably more useful to think of it as a component of structure. The interpretation of administrative guidelines for food safety decisions includes standard operating procedures for the use of specific technological tests. As such, when technology changes, there is a sense in which policy changes, too.

Second, the general category of performance can be taken to include the full range of criteria that would be applied in evaluating a policy. As will become clear shortly, some such criteria have little to do with the end state produced by the policy. The dominant practice in public policy analysis is to predict policy outcomes, and to report them as an end state, often as costs and benefits. This practice leaves the decision to the responsible party or parties, be they an administrator, a court or the Congress. Decision makers can and do apply criteria that make little if any use of predicted end states, but the typical practice among analysts is to equate the predicted end state with the policy's performance.

Analysts writing on the banning of Alar, for example, typically evaluate the policy in terms of a trade-off between the economic value of the apple crop for producers and some minimal, even tentative, reduction in risk for consumers. This approach leaves open the possibility of comparing these outcomes using a variety of criteria, but presumes that the decision is based upon projected policy consequences to the extent that it is defensible at all (Roberts and Van Ravenswaay, 1989).

How Ethics Bears on Policy

The assumption that consequences (or end states) provide the basis for evaluating public policy has its philosophical basis in the ethical writings of Jeremy Bentham and John Stuart Mill. These utilitarian philosophers argued that action can be justified only in light of the consequences, and they proposed the twin norm of counting consequences for all affected parties and of maximizing aggregate utility. Traditionally utilitarian philosophy has been criticized for its insensitivity to the distribution of costs and benefits. In more recent times, John Rawls (1971) has argued that policies should benefit the worst-off groups rather than maximize aggregate utility. As Nozick (1974) noted, both utilitarian and Rawlsian egalitarian theories evaluate policy by applying a norm or decision rule to the end state that the structure is expected to produce. Many economists who do not think of themselves as either utilitarian or egalitarian would also assume that end states provide the side basis for evaluating policy. The search for Pareto better solutions or efficient levels of pollution begins by predicting policy outcomes. The debate is over whether the accounting is accurate and complete *or* which principles to apply in evaluating end states.

To use the language developed here, these are all *performance or end state focused* approaches to ethics. Their philosophical pedigree extends back to Bentham, who hoped to reform an English legal system based upon status and privilege. By turning the debate toward consequences, Bentham established a burden of proof for which social rank and divine right were irrelevant. While common law based policy on past practice, Bentham's theory held that it *should* be based entirely on expected outcomes. Bentham assumed

that rationality consisted in actions chosen as means to an end. While one might disagree about ends, Bentham thought that a rational person must accept that acts which fail to achieve the desired end are to be rejected. The point here is that structure becomes a means toward an end. While citizens in a democracy can be expected to have different preferences, they must evaluate the rules and regulations adopted by policy makers only as means to *some* end. Hence end states are the dominant performance criteria for public policy.

Nozick's *Anarchy State and Utopia* (1974) is an extended philosophical attack upon this notion of political rationality. He offered a now famous analysis of why the basketball player Wilt Chamberlin is entitled to great wealth, despite what Nozick thought to be the lack of any proportionate social value produced by his play. The argument stressed that, given any initial distribution of wealth, policies that confiscate money voluntarily exchanged between Chamberlin and paying fans must necessarily violate individual liberties. While a performance focused analyst might argue that the market structure permitting such exchanges is efficient (in that it maximizes utility or produces a Pareto better outcome), such considerations are irrelevant for Nozick's argument. The point was that policies are justified *only* when they conform to an antecedently determined set of moral or political rights. The consequences produced by structures conforming (or failing to conform) to this set are irrelevant.

Just as it is possible to differ over the performance criteria used to evaluate policy, it is possible to disagree about which rights belong in the template used to evaluate policy. For Nozick and other libertarians, the template will be narrowly confined to those that protect individuals from interference by others. For liberals such as Ronald Dworkin (1977) or Henry Shue (1980), the list of rights may be much more expansive. The point here is that these approaches to policy are *structure focused*. They establish a burden of proof met only by 1) demonstrating that policy conforms to the antecedently chosen structural template; or 2) refuting the claim that a given right belongs in the template. Arguments that stress trade-offs, efficiency or other features of end states do not meet either test.

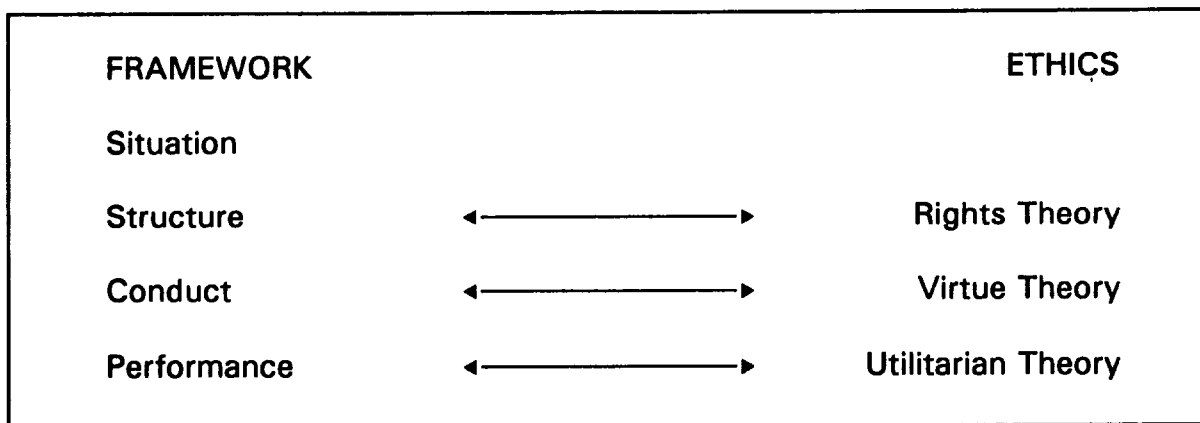


Figure 1: How Ethics Bears on Policy

The tension between end state and structure focused policy evaluation has a ready analogy in the debate over food labels. Whether required by law or custom, labels are clearly a component of structure for food policy. The debate is: how should labels be evaluated? Given a performance focus, labels will be evaluated in terms of the end state they produce for the producers and consumers of food products. Labels will be seen as educational tools. One will want to know whether the label allows the consumer to make food purchases that more fully satisfy preferences. Policy will be seen as a trade-off between producer costs, consumer preferences, and health; and labels can affect each of these outcomes in a variety of ways. A structure focused evaluation will see the matter almost entirely in terms of informed consent. Labels will be seen as transforming the conditions of consumer choice from those of mild coercion to implied consent. Policies that protect individual consent are acceptable; those which foreclose individual consent must bear a very heavy burden of proof before being judged acceptable. Labels will be preferred even if people choose to ignore them, or even if consumers have false beliefs that lead them to make less than optimal choices.

Utilitarian or consequentialist ethical arguments, then, express norms or policy criteria that focus on performance, while human rights arguments identify characteristics of structure that must be in place without regard to consequences. The matter does not end there, however. It is often a person's conduct that is judged ethical or unethical. If a policy structure induces individuals to behave in ways that are unethical, there is a

basis for rejecting the policy. For example, a pesticide policy which encourages producers to misrepresent their use of chemicals would be judged unethical, even if no rights are violated, or if no harm is done.

Many authors have taken up conduct-focused ethics in the past two decades. Bernard Williams (Smart and Williams, 1972) criticized utilitarian arguments because they fail to address the character of the moral agent. Alisdair MacIntyre (1981) has criticized both rights theory and utilitarian arguments for the emphasis that they place on an individual's self-regarding wants. He argues that a better approach would take up virtues and vices that are the reference points for moral character. These authors do not discuss policy, however. The public choice approach to policy analysis makes it possible to see how these philosophical ideas bear on policy by making it clear how situation and structure produce conduct. There is little doubt that most citizens would regard the conduct-focus as the most obviously "ethical," despite the relative lack of attention it has received by policy analysts. Public outrage over Congressional check bouncing, for example, is almost certainly focused upon conduct, rather than structure or performance.

With respect to food safety policy, the most likely relevance of conduct-focused evaluation is not to producers and consumers, but to the conduct of policy makers themselves. Arguments against the practice of pricing life, for example, are best analyzed as an objection to the practice of quantifying the value of life. Annette Baier

(1986), Allan Gibbard (1986), and Douglas MacLean (1990) have expressed the concern with pricing life in this way. The problem cannot be resolved by adjusting the amount of value assigned to lives; nor is the objection based on the suggestion that human lives should be assigned infinite value. The point is that persons of good character do not make decisions by attempting to decide how much others are worth. A policy procedure which requires public servants to engage in such conduct is, in this view, a corrupt and indefensible procedure, and the policies that result from it are tainted.

To sum up, ethics bears on policy in three ways. Traditional human rights arguments focus upon structure, applying a template of antecedently determined constraints in their assessment of policy. The language of virtue and integrity focuses on conduct, evaluating a policy in terms of the patterns of behavior it promotes. Finally, the end state or performance evaluation of policy that has become a staple of the social sciences draws upon the utilitarian tradition in ethics. Each approach establishes a burden of proof that cannot be met by arguments grounded in either of the other two approaches. At the same time, each approach is deeply grounded in the culture and habits of contemporary Americans.

Food Biotechnology, Policy and Ethics

An analysis of food labels that stresses rights and consent will establish very different burdens of proof than does an analysis that evaluates labels according to their consequences. Matters of character and conduct enter only indirectly into the disputed areas of policies for consumer information, but could be decisive to the extent that they break a deadlock between those focused on structure and those focused on performance or outcome criteria. Recombinant bovine somatotropin (BST) is the case that has spurred debate. The substantive ethical issues raised by the development and proposed release of BST concern unintended consequences for the dairy industry, dairy animals, and for environmental impact of dairying. However, it is public acceptability of milk produced using the new technology that has produced the greatest anxiety (Thompson, 1992). Opponents of BST have called for a ban

on the technology, and, short of that, for labeling of milk produced using recombinant BST (Hanson, 1991). The ethical evaluation of labeling policies for food biotechnology has therefore already assumed practical importance (see also Hopkins, Goldberg and Hirsch, 1991).

The case of BST should serve as motivation for thinking about ethical issues, but it is a poor example of the scientific issues that will arise in connection with the use of biotechnology for food products. At least some of these products will pose difficult questions for risk analysis, and some may pose quantifiable risks. By contrast, there is virtually no scientific support for questioning the safety of BST milk (Kroger, 1992). Future policy decisions will almost certainly be characterized by the kinds of uncertainty that have hindered the application of science to public policy in the regulation of artificial sweeteners (Merrill and Taylor, 1986) or of chemicals (Graham, Green and Roberts, 1988). In such cases, questions about the extrapolation of data from animal studies, or about the applicability of epidemiological data caused regulatory policy to become embroiled in technical and methodological disputes. Criteria for scientific judgment and cross disciplinary conflict over patterns of scientific inference are crucial to the policy debate. Because the procedures and norms for scientific enquiry are themselves matters of philosophical dispute, it is accurate to describe risk policy debates as philosophical controversies (Hollander, 1991). Debates over acceptable evidence extend philosophical controversy into the interpretation of situation, of the basic facts that must be accepted as constraints upon available policy options. These debates are not, however, ethical debates that conform to the pattern described above.

Although the debate over acceptable evidence will almost certainly recur in future food policy decisions, the lack of scientific or technical controversy over BST makes it a good example for considering ethical issues precisely because disagreement about the probability of harm does not confuse the ethical issues. The biological facts that make up the situation for BST milk are not themselves a source of controversy, at least not among scientifically informed participants. Nevertheless, labeling requirements for BST milk

have been proposed. A policy that certified or required labels should be understood as an alternative to policies which regulate by removing or approving products *tout court*. Labels thus become a component of policy structure, to use the terminology introduced here. It is worth noting, however, that labels might become a component of structure in any of several ways. One might require labels that proclaim the presence of BST milk, or one might permit the use of labels that certify its absence. In either case, the precise wording of labels will be extremely important, as will the procedures for assuring the integrity of labels. The diversity of approaches to labeling implies that it is not one policy proposal that is being discussed here, but a general class of potential policies that would be evaluated in similar ways.

Whatever labeling strategy is employed, a policy using product labels can be expected to stimulate certain patterns of conduct by consumers and by processors and manufacturers. Some consumers will read labels and will use information as a basis for food purchases; others will not. One would presume that consumers expressing concern over BST in milk would use the label, while others might not. These patterns of conduct will lead to consequences that determine the performance of a labeling policy. Relevant consequences certainly include health benefits or risks to food consumers that are incurred as a result of their conduct. They also include costs to consumers in the form of higher food prices, and in the trouble and inconvenience required for reading labels. Costs to processors and manufacturers are also a component of the policy's performance. Given this account of situation, structure, conduct and performance, it is possible to examine the ethics of a labeling policy for BST.

Performance Focussed Evaluation of Labels:

As noted, product labels can be expected to produce certain costs and benefits for consumers and producers. In the case of BST, the scientific consensus is that the health benefit to a person who would use such a label is zero. Consumers who express concern over the use of BST would derive some benefit from reduced anxiety if they are able to satisfy their preference for non-BST milk. These benefits must be weighed against the

direct costs of labeling, costs which may be significant when their impact upon processing is assessed. Even the approximate value of these costs and benefits is largely speculative, but the point here is to see how consequence assessment provides an ethical basis for the evaluation of policy. The policy is justified in terms of the acceptability and desirability of its consequences. The historical standard has been the utilitarian maxim proposed by Jeremy Bentham in 1789: act so as to produce the greatest good for the greater number of people. Although there are many cases in which pure optimization rules such as the utilitarian maxim may need to be modified (Thompson and Stout, 1991), policies which do not provide benefits that compensate for their direct cost of implementation to government and to affected industries will always be difficult to justify.

Structure Focussed Evaluation of Labels:

Structure focused evaluation centers upon protection of rights as a precondition to ethically legitimate application of state power. Two key criteria are consent and fairness. The principle of government by consent of the governed is, in many respects, the foundational norm of democratic government, while fairness, understood as equality before the law and protection of minority rights, constrains the excesses of democratic decision making. Labels are an attractive component of structure because they make it possible to argue that individual food consumers have been placed in a position to grant or withhold consent to food borne risks (real or alleged). A consumer who chooses to purchase a labeled food item can legitimately be understood to have consented to the transaction, so long as meaningful alternatives are available. A policy structure which does not allow consumers to discriminate on criteria they have judged to be important violates consent criteria. However, labels can also raise questions about fairness to the food industry. If the institutional practice is to use labels only in cases where serious risks to health have been scientifically demonstrated, as has been the case for tobacco, then the application of a label to BST milk may violate the rights of industry by unfairly prejudicing consumers against the product.

Conduct Focussed Evaluation of Labels:

Character and virtue are less clearly related to

labeling policy than are rights and consequences. It is not obvious how the presence or absence of labels for BST milk would induce consumers to engage in unethical conduct. Some Americans may be inclined to make moral judgments of character based upon a person's dietary choices. Some religions require a dietary regimen for the deviant, for example, and it is already common for vegetarians and non-vegetarians to make moral judgments about one another. Even so, there is little public consensus for such judgment. The more relevant conduct is that of industry. To the extent that labels represent a form of disclosure that would be required by norms of honesty or truth-telling, a practice of labeling might be thought to promote ethical conduct on the part of industry. Ironically, disclosure will win far more praise if it is voluntary. Hence, a labeling policy will win more praise from those who focus on conduct if it facilitates, but does not require, disclosure of relevant information. Conduct evaluation does not provide a clear mandate for or against labels, however, and it will not be emphasized in the comparison which follows.

Comparing Ethical Approaches for Policy Evaluation

Structure focussed and performance focussed approaches to policy evaluation establish different and sometimes contradictory burdens of proof. Evidence and argument which is highly relevant to a performance evaluation is often irrelevant to an evaluation in terms of rights and consent.

There are a number of difficult philosophical and economic measurement problems that must be addressed within a performance focussed evaluation (Giere, 1991). Two general points of dispute concern the quality of models used to predict health consequences, and the choice of a decision rule to compare consequences, once they have been assessed. The debate over linear vs. threshold extrapolation of data (Schaffner, 1991) is an example of the first problem. The debate over Delaney vs. *de minimus* is an example of the second (Jasanoff, 1991). The point here is to see that the crucial burdens of proof established within a consequence evaluation approach differ from those in a rights-based procedure. Within a struc-

ture focussed evaluation, consumer choice is important to the extent that it satisfies criteria of consent; questions of whether consumers are made better off by the choices they make are irrelevant.

Rights based approaches to social theory have never assumed that governments have any responsibility to make socially optimal policy decisions. Rather, the first ethical responsibility of government is a negative one: *not* to interfere in the personal liberties or freedoms of its citizens. Accordingly, structure focussed evaluation of public policy stipulates a list or template of rights, liberties, and possibly opportunities, much like the U.S. Bill of Rights. A policy is evaluated in terms of its ability to satisfy or fit this antecedently determined template of rights. The list of rights is adopted prior to entertaining any particular policy option, so performance evaluation of specific policies is not a component in justifying the inclusion of a given right. The key right with respect to food consumption is a general right to non-interference in personal choices, provided that personal choices do not violate complementary non-interference rights of others.

The example of labels for BST provides an illustration of why performance focussed and structure focussed approaches to understanding how ethics bears on policy introduce distinct burdens of proof. A more detailed analysis of labels would need to take up additional issues. For example, the traditional norm of caveat emptor has historically served as an informal component of structure for consumer food decisions. The previous discussion of labels has assumed that consumers have a right to any information they deem relevant about food choices, but caveat emptor might be taken to qualify this right. Further discussion of issues specific to labeling policies cannot be undertaken within the constraints of this paper. However, readers should be advised that what has been said to illustrate the contrast between structure and performance is far from being a complete ethical analysis.

The contrasting burdens of proof for performance philosophies and structure philosophies present a general problem for biotechnology policy and food safety. Interested parties, including scientists and regulators, can be so closely wedded

to one of these philosophies that they fail to understand the force of their opponents' arguments. Someone who insists upon interpreting structure-focussed rights arguments in terms of the end state produced by policy will simply miss the point of that argument. Rights arguments will appear as irrational or naive, failing to grasp the importance of trade-offs that are thought to be the main focus of policy evaluation. It is not difficult to find authors who appear to exhibit virtually total insensitivity to the burdens of proof entailed by a focus on structure. In a 1990 article on food safety policy for recombinant DNA derived animal growth hormones, Fred Kuchler, John McClelland and Susan Offutt characterize the issue entirely in terms of performance or end-state criteria. The idea that rights or consent are relevant is absent from their analysis. Doyle and Marth (1991) also offer an analysis focussed exclusively on end states.

Milton Russell (1990) has written that it is irresponsible for a public official to make policy decisions without attempting to assess the consequences to the fullest extent possible. He qualifies this commitment to performance evaluation by also stating that ". . . legitimacy flows from an acceptance of the decision, or at least the decision process, by those affected" (p. 22). This qualification stresses the importance of consent. Consent *can* involve the prediction of consequences, so long as predictions are part of an information sharing process designed to build consensus. But traditional consent criteria stress the protection of rights, and may leave the burden of predicting consequences to the affected parties themselves. Despite his qualifying comment, Russell may favor performance criteria in making the prediction of consequences a strict requirement of ethical policy making, even while he endorses the principle of consent. One aspect of the tension between end state evaluation and principles of consent is the question of who assesses consequences.

Biologists or economists who predict the consequences of biotechnology do not, generally, need the advice of citizens in the process of collecting data and making projections. They can produce a prediction of end states without seriously involving citizens in their activity. The key

predictions for regulation of foods involve risk assessment and economic impact. If citizens are invited to participate in decision making after such information has been collected, analyzed and presented, the opportunity for a structure or conduct focussed evaluation has been reduced, if not foreclosed, by the preponderance of evidence relevant only to performance criteria. Since structure focussed criteria often stress the importance of participation and consent, the lack of citizen participation in the scientific assessment of risk and of economic impact is doubly troubling. Citizens have been denied participation in the early stages of the process, and are faced with a final decision procedure in which evidence that is potentially irrelevant to consent criteria dominates.

Structure and conduct criteria should not be arbitrarily excluded from a decision, as they are when scientists make risk assessments without substantial citizen participation. But this is *not* to say that citizen assessment of risks should simply be substituted for scientific ones. Frank Cross (1992) accuses me of doing just this in a recent paper (Thompson, 1990). The point is that end state assessments cannot meet burdens of proof established by criteria that stress participation and consent. Deborah G. Mayo (1991) has an extended discussion of how scientific and citizen assessments of risks might be compared. People who interpret the criticism of scientific risk assessment as a call for citizen assessment are displaying a myopic focus upon performance criteria. Structure and conduct criteria establish burdens of proof in which *anyone's* assessment of likely end states is largely irrelevant. Put another way, if the goal is to implement a policy that is likely to minimize food related illness, then it seems obvious that the best scientific techniques should be used to predict the incidence of illness associated with a given product or practice. However, if the goal is to ensure that consumers have confidence in the food supply, an altogether different policy may be indicated. Consumer confidence may be very imperfectly correlated with the probability of illness. Confidence may be more closely correlated with participation and consent, with the structure under which dietary decisions are made, rather than the end state that is produced.

The implication is that, while performance evaluation is "objective," in the sense that it does not systematically favor any specific interests or political ideology, the practice of performing extensive scientific studies can introduce a bias against ethical criteria that emphasize structure and conduct. Yet it is easy to find examples of structure or conduct focused criteria in the history of American government. The framers of the U.S. Constitution were themselves structure-focussed in adopting the Bill of Rights, and conduct-focused in proposing the division of powers. It is therefore reasonable to presume that democratic decision making ought not be systematically biased against structure and conduct criteria. Barring specific arguments to the contrary, policy making procedures should avoid domination by any one of these three philosophical approaches to ethics, and should weigh evidence and arguments in terms of the burden of proof to which they are most clearly relevant.

None of this is to suggest that structure-focussed or conduct-focussed ethical criteria ought to determine policy choices unilaterally. The risks and economic consequences are obviously relevant to policy choice. The obvious ideal is when all three approaches to policy evaluation converge on the same choice, but there may be good reasons why impacts or end-states should be the overriding considerations in making some policy determinations where they conflict. It will be very difficult to understand or state those reasons, however, if one is so deeply committed to consequentialist or utilitarian thinking that it is impossible to understand how someone could see it another way. The main contribution of ethics to better policy making is to show how the opportunities for conflict and consensus rest upon alternative visions of the right and the good. A policy analysis framework in which situation, structure, conduct and performance have been clearly distinguished can contribute to that end.

Bibliography

- Baier, Annette. 1986. "Poisoning the Wells," in *Values at Risk*, Douglas E. MacLean, ed., Totowa, NJ: Rowman and Allanheld, pp. 49-74.
- Cross, Frank, B. 1992. "The Risk of Reliance on Perceived Risk," in *Risk: Issues in Health and Safety*, 3(1): 59-70.
- Doyle, Michael P. and Elmer H. Marth. 1991. "Food Safety Issues in Biotechnology," in *Agricultural Biotechnology: Issues and Choices*, Bill R. Baumgardt and Marshall A. Martin, ed., West Lafayette, IN: Purdue University Agricultural Experiment Station, pp. 55-80.
- Dworkin, Ronald. 1977. *Taking Rights Seriously*, Cambridge, MA: Harvard University Press.
- Gibbard, Allan. 1986. "Risk and Value," in *Values at Risk*, Douglas E. MacLean, ed., Totowa, NJ: Rowman and Allanheld, pp. 94-112.
- Giere, Ronald. 1991. "Knowledge, Values, and Technological Decisions: A Decision Theoretic Approach," in *Acceptable Evidence: Science and Values in Risk Management*, Deborah G. Mayo and Rachelle D. Hollander, eds., Oxford: Oxford University Press, pp. 183-203.
- Graham, John D., Laura C. Green and Marc J. Roberts. 1988. *In Search of Safety: Chemicals and Cancer Risk*, Cambridge, MA: Harvard University Press.
- Hanson, Michael. 1991. "Consumer Concerns: Give Us The Data," in *Agricultural Biotechnology at the Crossroads: Biological, Social and Institutional Concerns*, Ithaca, NY: National Agricultural Biotechnology Council, pp. 169-178.

- Hollander, Rachele D. 1991. "Expert Claims and Social Decisions: Science, Politics, and Responsibility," in *Acceptable Evidence: Science and Values in Risk Management*, Deborah G. Mayo and Rachele D. Hollander, eds., Oxford: Oxford University Press, pp. 160-173.
- Hopkins, D. Douglas, Rebecca J. Goldberg and Steven A. Hirsch. 1991. *A Mutable Feast: Assuring Food Safety in the Era of Genetic Engineering*, New York: Environmental Defence Food).
- Jasanoff, Sheila. 1991. "Acceptable Evidence in a Pluralistic Society," in *Acceptable Evidence: Science and Values in Risk Management*, Deborah G. Mayo and Rachele D. Hollander, eds., Oxford: Oxford University Press, pp. 29-30.
- Kroger, Manfred. 1992. "Food Safety and Product Quality," in *Bovine Somatotropin and Emerging Issues: An Assessment*, Milton, C. Hallberg ed., Boulder, CO: Westview Press, pp. 265-270.
- Kuchler, Fred, John McClelland, and Susan E. Offutt. 1990. "Regulatory Experience with Food Safety: Social Choice Implications for Recombinant DNA-Derived Animal Growth Hormones," in *Biotechnology: Assessing Social Impacts and Policy Implications*, David J. Webber ed., Westport, CT, Greenwood Press, pp. 131-144.
- MacIntyre, Alisdair. 1981. *After Virtue: A Study in Moral Theory*, Notre Dame: University of Notre Dame Press.
- MacLean, Douglas E. 1990. "Comparing Values in Environmental Policies: Moral Issues and Moral Arguments." *Valuing Health Risks, Costs, and Benefits for Environmental Decision Making: Report of a Conference*, Washington, DC: National Academy press, pp. 83-106.
- Mayo, Deborah G. 1991. "Sociological Versus Metascientific Views of Risk Assessment," in *Acceptable Evidence: Science and Values in Risk Management*, Deborah G. Mayo and Rachele D. Hollander, eds., Oxford: Oxford University Press, pp. 249-279.
- Merrill, Richard A. and Michael R. Taylor. 1986. "Saccharin: A Case Study of Government Regulation of Environmental Carcinogens," in *Agriculture and Human Values*, 3(1 and 2): 33-73.
- Nozick, Robert. 1974. *Anarchy State and Utopia*, New York: Basic Books.
- Rawls, John. 1971. *A Theory of Justice*, Cambridge, MA: Belknap Press of Harvard University Press.
- Roberts, Tanya and Eileen van Ravenswaay. 1989. "The Economics of Safeguarding the U.S. Food Supply," Economic Research Service, Agriculture Information Bulletin Number 566, U.S. Department of Agriculture.
- Russell, Milton. 1990. "The Making of Cruel Choices," in *Valuing Health Risks, Costs, and Benefits for Environmental Decision Making: Report of a Conference*, Washington, DC: National Academy Press, pp. 15-22.
- Schaffner, Kenneth F. 1991. "Causing Harm: Epidemiological and Physiological Concepts of Causation," in *Acceptable Evidence: Science and Values in Risk Management*, Deborah G. Mayo and Rachele D. Hollander, eds., Oxford: Oxford University Press, pp. 204-217.
- Schmid, Allen. 1987. *Property, Power, and Public Choice: An Inquiry into Law and Economics*, 2nd Edition, New York: Praeger Publishers.

- Schmid, Allen, James D. Shaffer and Eileen O. van Ravenswaay. 1983. "Community Economics: Predicting Policy Consequences," Department of Agricultural Economics, Michigan State University, East Lansing, MI.
- Shue, Henry. 1980. *Basic Rights: Subsistence, Affluence, and U.S. Foreign Policy*, Princeton: Princeton University Press.
- Smart, J. J. C. and Bernard Williams. 1973. *Utilitarianism For and Against*, New York: Cambridge University Press.
- Thompson, Paul B. 1990. "Risk Subjectivism and Risk Objectivism: When Are Risks Real?" *Risk: Issues in Health and Safety*, Concord, NH: Franklin Pierce Law Center, 1(1):3-19.
- Thompson, Paul B. 1992. "Ethical Issues in BST," in *Bovine Somatotropin and Emerging Issues: An Assessment*, Michael C. Hallberg ed., Boulder, CO: Westview Press, pp. 33-50.
- Thompson, Paul B. and Bill A. Stout. 1991. *Beyond the Large Farm: Ethics and Research Goals for Agriculture*, Boulder, CO: Westview Press.