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## **An Agricultural Law Research Article**

# **GM Foods: Potential Public Consultation and Participation Mechanisms**

by

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# **GM FOODS: POTENTIAL PUBLIC CONSULTATION AND PARTICIPATION MECHANISMS**

**Gary E. Marchant and Andrew Askland\***

**ABSTRACT:** One direct mechanism for improving public confidence in genetically modified foods may be to provide a greater role for the public in making policy decisions about such products. There are compelling normative and practical reasons for involving the public in such decisions. Yet, effective and meaningful public participation is made difficult by several factors, most importantly the lack of knowledge by most members of the public about scientific subjects, including biotechnology. A number of mechanisms for public participation exist, but most suffer from one of two principal limitations. Either they provide for only a small number of participants, usually representatives of interest groups, or they provide for widespread public participation but have no means for ensuring that the public input is informed. The recently completed national debate on GM foods in the United Kingdom illustrates many of the difficulties in providing for informed and effective public participation. New innovative approaches, such as on-line deliberations, are needed to achieve the goal of meaningful public participation in science-based policy decisions about genetically modified foods.

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Public opinion is critical to the acceptance of genetically modified (GM) foods.<sup>1</sup> When it comes to food, the consumer is king, even when consumer

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1. See Michael Siegrist, *The Influence of Trust and Perceptions of Risks and Benefits on the Acceptance of Gene Technology*, 20 *RISK ANALYSIS* 195, 195 (2000); Mark Cantley et al.,

opinion may not be scientifically defensible. If the public is suspicious of GM foods, they will not buy them, and food processors and manufacturers will be forced to exclude GM ingredients from their products.<sup>2</sup> Farmers will, in turn, be forced to grow exclusively non-GM crops to ensure that they can sell their harvest.

Given the critical role of the consumer in determining the acceptability of GM foods, one obvious opportunity for confidence building is initiatives that involve the public more directly in decisions about GM foods.<sup>3</sup> There has been increasing emphasis in recent years on mechanisms for involving or consulting the public in the resolution of policy controversies with a significant scientific or technological component.<sup>4</sup> Such science-laden policy disputes present a special challenge to democratic and deliberative theory because the resolution of these disputes generally requires scientific and technological knowledge that is often beyond the grasp of average citizens.<sup>5</sup> Innovative strategies are required to involve the public in these disputes, which otherwise tend to be dominated by experts, without sacrificing the specialized knowledge that expertise brings to the table.

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*Regulations and Consumer Attitudes Toward Biotechnology*, 17 NATURE BIOTECH. BV37, BV37-38 (Supp. 1999).

2. For example, an executive of the Canadian food processing giant McCain Foods admitted that his company's announcement in 1999 that it would no longer buy genetically modified potatoes was not based on any scientific concerns about the safety of GM foods but was "a response to consumer, market demand." He said that three of his company's customers buy 45% of the french fries sold in the world, and when they express nervousness about consumer reaction to GM, food processors such as McCain "have to listen." Barry Wilson, *Consumers Rule—Even If They're Wrong*, W. PRODUCER, Dec. 13, 2001, available at <http://www.producer.com/articles/20011213/news/20011213news15a.html>. See also Nick Heather: *Building Consumer Confidence*, 2 AGBIOTECH BUZZ, Aug. 28, 2002 (quoting the Director of Product Safety at Gerber Products Company as stating that the company sought to avoid using GM crops in its products not because of any safety concerns, but because of "consumer perceptions that might affect confidence in the company"), available at <http://pewagbiotech.org/buzz/display.php3?StoryID=74>.

3. See Thérèse Leroux et al., *An Overview of Public Consultation Mechanisms Developed to Address the Ethical and Social Issues Raised by Biotechnology*, 21 J. CONSUMER POL'Y 445 (1998) ("[T]he expansion of biotechnology ultimately depends on its acceptance by the public; hence the importance of taking into consideration the reactions of the public to these scientific developments.").

4. See GAIL CHARNLEY, *DEMOCRATIC SCIENCE: ENHANCING THE ROLE OF SCIENCE IN STAKEHOLDER-BASED RISK MANAGEMENT DECISION-MAKING* 4 (2000), available at <http://www.epa.gov/sab/pdf/scistakape.pdf> (last visited Oct. 28, 2003):

More and more risk management decisions are developed and implemented using collaborative processes involving consultation and cooperation among stakeholders, including regulators, regulated parties, advocacy-based organizations, and the general public. This trend constitutes a move away from the unilateral, technocratic, regulatory model of risk management decision-making toward more inclusive, democratic, non-regulatory processes, reflecting the democratic ideal that people should be involved in their own governance.

5. See Thomas Dietz, *Preface: Democracy and Science to Fairness and Competence in Citizen Participation* xvii, xix (Ortwin Renn et al. eds., 1995) (observing that "traditional democratic processes seem to falter" on technology policy issues); Daniel J. Fiorino, *Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms*, 15 SCI. TECH. & HUM. VALUES 226, 229 (1990); Frank N. Laird, *Participatory Analysis, Democracy, and Technological Decision Making*, 18 SCI. TECH. & HUM. VALUES 341, 341 (1993).

Potential mechanisms for public participation in science-laden policy controversies vary in their emphasis and objective, ranging from initiatives that are primarily educational in focus to processes that are more deliberative or even decisional.<sup>6</sup> While promoting greater public participation is a popular mantra with which few disagree, providing mechanisms for fair, informed, and meaningful public participation is difficult to achieve. An enormous amount of scholarly analysis and practical experimentation in exploring innovative mechanisms for public participation has been undertaken, especially for public policy controversies with a substantial scientific and technological component. While no “magic bullets” have been discovered that can guarantee effective public participation, significant progress has been made in understanding the potential, the limitations, and the complexities of various public participation mechanisms.

This paper will provide a critical overview of potential mechanisms for increasing public participation with regard to GM foods and suggest some promising new directions and perspectives for the future. Part I summarizes the case for public participation in science-laden policy controversies. Part II describes the principal challenges and limitations in providing for informed and meaningful public participation. Part III surveys existing mechanisms for public participation and assesses their value in light of the challenges and limitations described in the previous section. An ambitious recent initiative to involve the general public in the decision-making process for GM foods in the United Kingdom is described and evaluated in Part IV. Finally, Part V describes some promising new directions for potential public participation and consultation regarding GM foods.

## **I. THE CASE FOR PUBLIC PARTICIPATION**

Why bother with the Sisyphean task of enabling public participation in discourse about complicated scientific issues? One might be tempted to assume that the small part of the public that pays any attention is easily misled by generalizations and worst case scenarios and, in consequence, forms unsubstantiated opinions that retard rather than advance the quality of the discourse. The need for systematic attention to detail and subtlety challenges well-trained professionals; it is surely unreasonable to expect a lay audience to marshal the appropriate substantive background and reasoning skills to grasp, let alone contribute to, ongoing science-laden policy controversies. Perhaps the best we can hope for is a benign paternalism that spoonfeeds the public a dumbed-down version of solutions achieved by qualified scientists after the fact of their achievement. Or is this description unfairly pessimistic, reinforcing overly broad

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6. Public participation has been defined as “forums for exchange that are organized for the purpose of facilitating communication between government, citizens, stakeholders and interest groups, and businesses regarding a specific decision or problems.” Ortwin Renn et al., *A Need for Discourse on Citizen Participation*, in *FAIRNESS AND COMPETENCE IN CITIZEN PARTICIPATION* 1, 2 (Ortwin Renn et al. eds., 1995).

stereotypes and thereby exacerbating a serious problem by mocking the prospect of improvements?

The difficulty of enabling public participation is conceded as a premise.<sup>7</sup> The question then is, given these difficulties, should we bother with public participation? The affirmative answer arises from two justificatory prongs. The first prong recognizes the inevitability of science's dependence upon nonscientific values.<sup>8</sup> The second prong invokes the special obligations that pertain in a democratic political order.

Within the first prong, there are several instrumental reasons for recommending continuing efforts to promote public participation. First, public participation facilitates policy implementation. The process of participation, aside from its actual impact on outcomes, promotes public endorsement of those outcomes.<sup>9</sup> Widely inclusive participation declares an enlarged circle of involved parties, encourages the acceptance of scientific findings, and enables the voluntary modification of public practice to accommodate the insights of that research. Involved parties are more likely to identify as stakeholders and adjust their behavior to serve their newly informed judgments.<sup>10</sup>

To make persuasive progress with the public on an issue, scientific or otherwise, requires a foundation of trust; familiarity with the premises and priorities of scientific research fosters trust. Indeed, disclosure as a social policy, mandating the standardized disclosure of factual information to the public in a digestible form, is an important element of increasing a well-founded public

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7. See *infra* Part II.

8. It is a now hackneyed insight that science is value laden. Nigeria would no doubt pursue a different scientific research agenda than would Canada. A commitment to explore space will focus scientific energies and resources differently than a commitment to probe the genome or develop biological or chemical weaponry. Misogyny, racism, or colonialism will affect the formation of hypotheses and the evaluation of observations. Science does not exist apart from its scientists, and humans are ineluctably affected by the acculturated lens through which they observe and with which they order their observations. These insights are deflationary; they suggest caution in the face of temptations to identify science as objective truth.

9. See, e.g., Joseph L. Arvai, *Using Risk Communication to Disclose the Outcome of a Participatory Decision-Making Process: Effects on the Perceived Acceptability of Risk-Policy Decisions*, 23 RISK ANALYSIS 281 (2003) (providing experimental evidence that the public is more inclined to accept a risk-based decision when explicitly told that a public participation process was included in the decision-making process than when it is not); Ambuj Sagar et al., *The Tragedy of the Commons: Biotechnology and Its Publics*, 18 NATURE BIOTECH. 2, 4 (2000) ("Institutions such as the biotechnology industry and government agencies stand to gain greater acceptance only by soliciting public input, implementing policies in a transparent and democratically representative fashion, and demonstrating their responsiveness to concerns raised by scientific experts, other organizations, and citizens and consumers around the world.").

10. See PRESIDENTIAL/CONG. COMM'N ON RISK ASSESSMENT AND RISK MGMT., FRAMEWORK FOR ENVIRONMENTAL HEALTH RISK MANAGEMENT 17 (1997) [hereinafter RISK COMMISSION] ("Experience increasingly shows that risk management decisions that are made in collaboration with stakeholders are more effective and more durable."), available at <http://riskworld.com/Nreports/1997/risk-rpt/pdf/EPAJAN.pdf> (last visited Oct. 28, 2003).

confidence.<sup>11</sup> Participation helps resolve conflicts and confusion in the statement of policy and encourages broader acceptance of policy implementation. Without participation, public practice may resist the import of scientific recommendations, however obvious (to scientists) their benefits.

A second instrumental reason is that participation is a means of informing and improving scientific and other relevant knowledge. Scientists would not expect lay persons to suggest methodological laboratory improvements, but they can help steer the direction of research. Important facts can be neglected in the rarified air of the laboratory or academy. Narrowly focused facts may overwhelm legitimate counterbalancing considerations perforce of their scientific pedigree. The claim is that public participation leads to objectively superior decisions. This is particularly true in the case of stakeholders who are easily motivated to contribute to the development of ingenious solutions. In the context of environmental decisions, many studies conclude that "more intensive forms of stakeholder involvement are more likely to produce higher-quality decisions."<sup>12</sup> These decisions do not ignore relevant scientific information. Rather, they appropriately utilize the available technical resources and they contribute new information to the process.

The public can bring to bear valuable information, alternative understandings, and creative thinking in solving particular problems.<sup>13</sup> Not the least of these contributions is a reluctance to evaluate proposals solely on economic terms (as a reductionistic cost-benefit analysis), but to introduce ethical considerations as well.<sup>14</sup> This claim is particularly relevant with applied science, where the purpose is to study a matter of practical concern and generate recommendations that have genuine prospects for implementation.

The second prong of the argument for public participation is normative rather than instrumental. The special commitments of a democratic order explain why public participation is crucially important to scientific endeavor within democracies, regardless of the disinclinations or ineptitudes of particular publics. If the people are the source of political legitimacy, then they are the preferred source of impetus for change.<sup>15</sup> Of course, the public rarely speaks with a single voice about anything. There are no pure democracies because it is impossible to

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11. MARY GRAHAM, *DEMOCRACY BY DISCLOSURE: THE RISE OF TECHNOPOPULISM* 138–39 (2002).

12. Thomas C. Beierle, *The Quality of Stakeholder-Based Decisions*, 22 *RISK ANALYSIS* 739, 747 (2002).

13. See COMM. ON RISK CHARACTERIZATION, NAT'L RESEARCH COUNCIL, *UNDERSTANDING RISK: INFORMING DECISIONS IN A DEMOCRATIC SOCIETY* 78–79 (Paul C. Stern & Harvey V. Fineberg eds., 1996) ("Many decisions can be better informed and their information base can be more credible if the interested and affected parties are appropriately and effectively involved in deliberation."); RISK COMMISSION, *supra* note 10, at 17 ("Stakeholders bring to the table important information, knowledge, expertise, and insights for crafting workable solutions.")

14. Fiorino, *supra* note 5, at 227 ("Studies of lay judgments about technological hazards reveal sensitivity to social and political values that experts' models would not acknowledge.")

15. *Id.* at 227 ("The normative argument accepts, as an ethical presupposition, that citizens are the best judge of their own interests.")

gather all of a nation's citizens in one place and devise procedures to assure that all of these citizens are comparably prepared to deliberate and decide the nation's business. The history of political philosophy abounds with shrill criticism of pure democracy. Plato and Aristotle both thought that the rabble would succumb to sophistic oratory and pursue short-term follies. This ease with which the fleeting passions of an uninformed public could be manipulated was a persuasive argument that aristocratic alternatives were preferable. (Identifying and selecting the appropriate elite has proved an elusive task.)

The Founding Fathers of the United States were divided by competing notions of how their proposed democracy should operate. The Federalists sought to refine the public will with a policy of "successive filtrations."<sup>16</sup> Representative government serves this function, as does a Senate elected by state legislatures and thus only indirectly elected by the people. Anti-Federalists sought more direct connections to the people, supporting shorter terms for elected officials and frequent referenda. The bone of contention here is whether the public will is best expressed directly or via intermediary conduits. Direct expression claims the democratic high ground; let the people decide here and now, each citizen's vote counting the same.

The reservations about direct democracy are two-fold. First, many errors arise in the immediacy of the present. The ancient worry was that an aroused rabble might destabilize a polity under the sway of a deviously effective orator (or, in a modern setting, a flood of inflammatory propaganda or the comprehensive suppression of alternative thought and expression). A second reservation doubted that all issues were best resolved by a counting of hands. Complex issues often require balancing and trade-offs and are badly served when simplistic summaries are drafted to influence voters. Other issues are not suited to balloting at all. Issues of fact are not verified or refuted by force of a majority vote. The influence of facts upon policy is a political judgment, but the verity of facts is not a function of their popularity.

These concerns about the directness of democratic expression have not been resolved. We live in an age when public referenda have been alternately praised and savaged as a means to constrain the powers of (merely) representative government. Single issue campaigns, waged by parties and political action committees, have often forced candidates to hew closely to an openly declared position and reduced politics to duels of simplistic slogans where only a few hot button issues obtain regular scrutiny.

Older criticisms of democracy noted the contrast between a fleeting opinion inflamed by oratory or passion and a considered opinion reached after reflection and analysis. Recent controversies in democracy theory point to the manipulative features of various purportedly democratic practices. According to this view, a form of detached pluralism, democratic practices are essentially contests among opposed interests. Government arbitrates among different interests within the

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16. JAMES S. FISHKIN, *THE VOICE OF THE PEOPLE: PUBLIC OPINION AND DEMOCRACY* 57 (1995).

public. What is good for that public is contingent, the result of negotiation among those interests. Pursuit of a comprehensive inclusion of multiple interests is forsaken. Instead one devises strategies to advance one's interests regardless of the value of competing interests. For example, referenda may express the preferences of a particular electorate at a particular time and therefore seem a true expression of majority rule. On the other hand, the results of referenda may bind duly elected officials against the fulfillment of their duties because they do not have the flexibility to respond to significantly changed circumstances. Indeed, referenda may poorly capture the preferences of an electorate who after the fact of their vote concede that they did not intend to impose severe constraints upon solution sets for unforeseen, later developing problems. Moreover, the electorate that passes the referendum imposes constraints on a later and different electorate.

These problems may be evidence that democracies are failing to perform their intended functions, in which case a normative concern for including scientific inquiries among the subjects vying for consideration in a democratic order would be misplaced. On the other hand, the problems may be evidence of the vibrancy of democratic theory and practice. A recognition of the shortcomings of particular democratic practices is not proof of the failure of democratic practice generally, but rather is evidence that democratic participation remains a priority, however problematic its exact configuration in changing societies. Contests about the appropriate form for democratic practice testify to the importance of those forms and to a broadening recognition of its importance. Even as we continue to debate the protections appropriate to particular rights, so too do we debate the vitality of particular democratic practices.

An important development in political theory in the last decade has been an elaboration of deliberative democracy as the necessary form of a truly democratic order.<sup>17</sup> According to this view, the formality of holding regular elections is insufficient for a democratic order. Instead, there must be ample and robust discussion among the electorate before each election to enable an informed and consultative vote. It is not enough to cast a ballot. One must have a real opportunity to inform oneself about the issues and candidates and engage in unfettered discussion with other citizens similarly situated. Instead of presuming that an isolated individual holds and knows clearly his fixed preferences, deliberative democracy builds upon an alternative model of personality in which individuals change their preferences over time as they mature and as they interact with other individuals.<sup>18</sup> The goal of an informed electorate consulting with itself

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17. See THOMAS CHRISTIANO, *THE RULE OF THE MANY: FUNDAMENTAL ISSUES IN DEMOCRATIC THEORY* (1996).

18. See THOMAS C. BEIERLE & JERRY CRAWFORD, *DEMOCRACY IN PRACTICE: PUBLIC PARTICIPATION IN ENVIRONMENTAL DECISIONS* 64 (2002) ("This 'popular' democratic theory stresses the importance of the act of participation not only in influencing decisions but also in strengthening civic capacity and social capital. Like pluralism, popular democracy emphasizes interaction among adversarial interests, but that interaction is viewed less as a competitive negotiation than as a way to identify the common good and subsequently act on shared common communal (versus individual) goals.")



is an ever changing target because members of that electorate continually grow and alter their preferences. This is a dynamic model of an evolving community, and it presents an ideal by which to measure the quality of particular polities. With this model, we can easily include scientific and technological controversies as a legitimate focus for public deliberation. The model is not periodic referenda on scientific proposals, but rather the promotion of informed discussion of these proposals. A voting console by each television set does not assure an improved democracy, but merely more occasions to vote. With the model of deliberative democracy, we can make normative claims about the public's need to engage with scientific endeavors because ideally everything that affects a polity's future should be included among its internal deliberations.

## II. THE PROBLEMS AND LIMITATIONS OF PUBLIC PARTICIPATION PROCESSES

While involving the public in decision making on science-laden policy controversies is compelling in principle, in practice there are many obstacles and complexities in ensuring fair, meaningful, and effective public participation. Many commentators frame these issues as a tension between "fairness" and "competency," where fairness refers to broad representation and equalization of power, and competency refers to the technical capability of the participants and process.<sup>19</sup>

### A. Competency: The Achilles Heel of Public Participation

Public policy on important societal issues obviously needs to be properly informed with the underlying facts, knowledge, and uncertainties.<sup>20</sup> Yet, on most science-laden policy issues, the majority of the public is woefully ignorant of the subject, whether measured by their own self-assessments or by more objective evaluations employing questionnaires or surveys.<sup>21</sup> As one group of commentators recently lamented:

At the heart of the technological society that characterizes the United States lies an unacknowledged paradox. Although the nation increasingly depends on technology and is adopting new technologies at a breathtaking pace, its citizens

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19. Beierle, *supra* note 12, at 740-41; Thomas Webler, "Right" Discourse in Citizen Participation: An Evaluative Yardstick, in FAIRNESS AND COMPETENCE IN CITIZEN PARTICIPATION 35, 38-39 (Ortwin Renn et al. eds., 1995); Julia Abelson et al., *Deliberations About Deliberative Methods: Issues in the Design and Evaluation of Public Participation Processes*, 57 SOC. SCI. & MED. 239, 244 (2003); Judith Petts, *Evaluating the Effectiveness of Deliberative Processes: Waste Management Case-studies*, 44 J. ENVTL. PLAN. & MGMT. 207, 208-09 (2001).

20. See Frank B. Cross, *The Public Role in Risk Control*, 24 ENVTL. L. 887, 903 (1994) ("There is no reason to believe that even an innumerate public wants government to base decisions upon the innumerate miscomprehension or sciolism of those who have drunk too shallow of the Pierian Spring.").

21. See *id.* at 892 ("[P]ublic risk estimates may be condemned as inaccurate, irrational, or even ignorant.").

are not equipped to make well-considered decisions or to think critically about technology.<sup>22</sup>

Similarly, the “major finding” of the National Science Foundation’s (NSF’s) most recent survey of public understanding of science and technology is that “Americans are highly supportive of science and technology (S&T), but lack knowledge of them.”<sup>23</sup>

The widespread lack of scientific knowledge on the part of the general public is demonstrated by surveys that ask citizens a series of questions about basic scientific terms and concepts. For example, the most recent NSF survey found that less than half of the population (48%) knew that electrons are smaller than atoms or that the earliest humans did not live at the same time as the dinosaurs.<sup>24</sup> Moreover, in open-ended rather than multiple-choice questions, only 22% of respondents provided an acceptable definition of “molecule,” and only 45% could define “DNA.”<sup>25</sup> Another disturbing finding is that less than half the population reportedly realizes that the earth goes around the sun once a year.<sup>26</sup>

Most members of the public are aware of their limited knowledge of science and technology issues. The NSF survey of public understanding of science found that less than 15% of Americans believe they are “very well informed” about science and technology, while approximately 30% consider themselves “poorly informed.”<sup>27</sup> The survey also found that in the period from 1997 to 2001, the percentage of the general population who felt that they were poorly informed about science and technology grew rather than diminished, notwithstanding the ever-increasing importance of science and technology in today’s society.<sup>28</sup>

The NSF survey defined the “attentive public” for any particular issue as those who express a high level of interest in the issue, feel very well informed about it, and read stories in a newspaper or magazine about the issue.<sup>29</sup> The survey found that for most of the science and technology issues included in the NSF study, less than 10% of the public could be considered “attentive.”<sup>30</sup>

On the specific subject of GM foods, there is also considerable evidence of a substantial lack of public knowledge about the nature, risks, and benefits of GM foods.<sup>31</sup> Much of the data comes from individuals’ self-assessment of their own

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22. A. Thomas Young et al., *Improving Technological Literacy*, ISSUES SCI. & TECH., Summer 2002, at 73, 73.

23. NAT’L SCI. BD., NAT’L SCI. FOUND., SCIENCE AND ENGINEERING INDICATORS—2002, at 7–4 (2002) [hereinafter NSB].

24. *Id.* at A7–10.

25. *Id.*

26. See H.W. LEWIS, TECHNOLOGICAL RISK 43–44 (1990).

27. NSB, *supra* note 23, at 7–8.

28. *Id.*

29. *Id.* at 7–9.

30. *Id.*

31. *But see* Claire Marris, *Public Views on GMOs: Deconstructing the Myths*, 2 EMBO REP. 545, 546 (2001) (arguing that while most of the public lacks adequate knowledge of GM foods, this lack of knowledge is generally not relevant to the public’s perception of GM foods, which likely would not be affected by additional knowledge). See also *infra* note 50 and accompanying text.

knowledge. A review of the available polling data by the NSF found that approximately 70% of the public consider themselves “not very well informed” or “not informed at all” about biotechnology.<sup>32</sup> In one study, 40.4% of respondents indicated that they had “no knowledge” about GM food, while only 2.9% claimed that they were “very knowledgeable.”<sup>33</sup> In another study which asked how much members of the public knew about GM foods, 81% of respondents said they knew “a little” (36%), “nothing” (11%), or were not even aware of GM foods (34%), while only 4% claimed they knew “a lot” about GM foods.<sup>34</sup>

The public also demonstrates its general lack of knowledge when given pop quiz questions on basic biotechnological facts. For example, one question asked whether the following statement is true or false: “Ordinary tomatoes do not contain genes, while genetically modified tomatoes do.” Only 44% of Americans (and 40% of Europeans) know that this statement is false.<sup>35</sup> Another study that asked the same question but substituted corn for tomatoes found that only 33 percent of the respondents recognized that the statement was false.<sup>36</sup> Another poll asked consumers whether there are foods produced through biotechnology in the supermarket now, and only 36 percent correctly answered “yes.”<sup>37</sup>

Lacking basic knowledge about scientific issues and practices, the public is prone to being misled by unreliable information. In the words of one science journalist, “[w]ithout a grasp of scientific ways of thinking, the average person cannot tell the difference between science based on real data and something that resembles science—at least in their eyes—but is based on uncontrolled experiments, anecdotal evidence, and passionate assertions.”<sup>38</sup> Concerns have been expressed that decision-making processes which lean toward greater participation by nonexpert stakeholders result in decisions that are not consistent with scientific knowledge.<sup>39</sup> Moreover, members of the public will be deterred from participating in deliberations on highly technical problems if they believe they lack sufficient knowledge to participate effectively.<sup>40</sup>

32. NSB, *supra* note 23, at 7–16.

33. Jayson L. Lusk & Patrick Sullivan, *Consumer Acceptance of Genetically Modified Foods*, FOOD TECH., Oct. 2002, at 32, 35.

34. James Shanahan et al., *Attitudes About Agricultural Biotechnology and Genetically Modified Organisms*, 65 PUB. OPINION Q. 267, 274 (2001).

35. NSB, *supra* note 23, at 7–21, 22.

36. Lusk & Sullivan, *supra* note 33, at 35.

37. Shanahan et al., *supra* note 34, at 275.

38. Boyce Rensberger, *The Nature of Evidence*, 289 SCIENCE 61 (2000).

39. See, e.g., TERRY F. YOSIE & TIMOTHY D. HERBST, USING STAKEHOLDER PROCESSES IN ENVIRONMENTAL DECISIONMAKING: AN EVALUATION OF LESSONS LEARNED, KEY ISSUES, AND FUTURE CHALLENGES (1998), available at <http://www.gdrc.org/decision/nr98ab01.pdf> (last visited Oct. 29, 2003); Peter T. Allen, *Public Participation in Resolving Environmental Disputes and the Problem of Representativeness*, 9 RISK: HEALTH, SAFETY & ENV'T 297, 303–04 (1998); Cross, *supra* note 20. But see CHARNLEY, *supra* note 4, at 2 (concluding that “scientific integrity is maintained and its credibility is assured when stakeholders are involved in deciding how science is used to answer their questions and in obtaining the scientific information needed to answer those questions”).

40. See Laird, *supra* note 5, at 353; see also Sheila Jasanoff, *Technologies of Humility: Citizen Participation in Governing Science*, 41 MINERVA 223, 239 (2003) (“Expert analytical frameworks

An additional complexity relating to public understanding of scientific and technical issues is that public ignorance or invalid assumptions are often intertwined with otherwise valid social, cultural, ethical, or political values.<sup>41</sup> “An important truism of social psychology is that people respond not to some objective reality but to their own subjective interpretations or definitions of that reality.”<sup>42</sup> It is now well established that the public’s perception of risks is not based solely on objective attributes such as the probability and magnitude of harm. Other, more subjective factors such as dread, voluntariness, familiarity, and fairness also affect whether the public considers a particular risk to be acceptable or not.<sup>43</sup> When such concerns are based on supportable factual premises and assumptions, they need to be taken into account, but when based on invalid assumptions, they make a much more tenuous claim.<sup>44</sup>

For example, with respect to GM foods, many consumers are concerned that such foods are not “natural.”<sup>45</sup> This view may be based on the invalid assumption that all non-GM foods are “natural,” whereas in fact almost all foods have been manipulated and modified by humans.<sup>46</sup> An opinion that relies on such a falsely derived division of natural and unnatural foods is not entitled to deference. On the other hand, if individuals have a reasonable understanding of current human manipulations of food, but are uncomfortable that GM technology extends our capability to modify food past some perceived threshold of acceptability, then this viewpoint has the merit of attempting to generate an evaluation that comports with

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create high entry barriers against legitimate positions that cannot express themselves in terms of the dominant discourse.”).

41. See Paul Slovic, *Informing and Educating the Public About Risk*, 6 RISK ANALYSIS 403, 410 (1986) (“Perhaps the most important message from the research done to date is that there is wisdom as well as error in public attitudes and perceptions.”).

42. Lee Ross & Donna Shestowsky, *Contemporary Psychology’s Challenges to Legal Theory and Practice*, 97 NW. U. L. REV. 1081, 1088 (2003). We are surrounded by efforts to influence these interpretations and definitions. It is difficult to effectively discriminate among this surfeit of signals, and a pervasive response is an alienation from various media as reliable sources of information. Instead, one picks and chooses one’s preferred provider(s). The recent attention to Internet news services that match the subscribers’s political and economic orientation suggests the difficulty of generating a common conversation. See CASS R. SUNSTEIN, *REPUBLIC.COM* (2001).

43. See Paul Slovic, *Perception of Risk*, 236 SCIENCE 280 (1987).

44. Cross, *supra* note 20, at 904 (“The Gordian Knot is segregating the amount of perceived risk that is explained by the public’s cognitive limitations from the amount of perceived risk that is explained by some value issue.”); *id.* at 950 (“To the extent that [public] perceptions are grounded in cognitive limitations, biased information sources, cognitive dissonance, control, or framing bias, the perceptions are unworthy of reliance. Public perceptions influenced by voluntariness, catastrophic potential, or dreadfulness are values that may be appropriate for consideration by regulators of risk.”). Cross describes these various factors affecting public participation in detail. *Id.* at 899–927. See also Cass R. Sunstein, *Selective Fatalism*, 27 J. LEGAL STUD. 799 (1998) (concluding that some heuristics, cognitive pathologies, influences, and social norms that affect the public’s perception of risks are valid while others are not).

45. See George Gaskell et al., *Biotechnology and the European Public*, 18 NATURE BIOTECH. 935, 937 (2000); Susanna Hornig Priest, *US Public Opinion Divided Over Biotechnology?*, 18 NATURE BIOTECH. 939, 940 (2000).

46. See Channapatna S. Prakash, *The Genetically Modified Crop Debate in the Context of Agricultural Evolution*, 126 PLANT PHYSIOLOGY 8, 9–11 (2001).

available facts.<sup>47</sup> The problem is that the population of people expressing concern about the “unnaturalness” of GM foods possess a hodgepodge of valid and invalid assumptions and beliefs.

A further complexity is that the definition of an “informed” participant is itself a contested subject. When precisely does someone become “informed”? What type of information is an “informed” person expected to know, given that the scope and quantity of potentially relevant knowledge on virtually any major controversial issue is beyond the grasp of any single individual. The requirement for “informed” participation thus risks being used (or abused) strategically to exclude or diminish selectively some types of information, knowledge, or experience.<sup>48</sup> Notwithstanding this valid concern, it is almost always the case that an individual will need a basic understanding of the principal arguments and positions on an issue and their supporting evidence to participate effectively and meaningfully in deliberative processes.

The bottom line is that the “public” may be ignorant on some aspects of science and technology, but they are not uneducable. With adequate preparation, information, commitment, and time, most members of the public have the capability to become knowledgeable about virtually any science and technology topic.<sup>49</sup> The much-quoted advice of Thomas Jefferson is still applicable: “If we think [the public] not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion.”<sup>50</sup> While education is important, it also must be recognized that

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47. See Marris, *supra* note 31, at 546 (“A common viewpoint [in a survey of European citizens] was that we have previously only been crossing already existing organisms, while we are now also creating novel life-forms that would not have existed otherwise. Thus, genetic engineering techniques were described as ‘pushing Nature beyond its limits,’ and were thought to ‘upset the equilibrium of Nature.’”).

48. Abelson et al., *supra* note 19, at 242 (“An additional ‘double-edge’ built into the deliberative paradigm is the naive assumption about the role of information as a tool for informing dialogue which ignores the reality of information as a source of power, with respect to its availability and use, in the participatory process.”).

49. See, e.g., Petts, *supra* note 19, at 218 (analysis of two citizen juries and citizen advisory committees convened to address waste strategy issues by British local authorities concluded that initial concerns of officials that public would be unable to comprehend technical aspects of the issues proved “unfounded”).

50. Letter from Thomas Jefferson to William Charles Davis (Sept. 28, 1820), *quoted in* JOHN BARTLETT, *FAMILIAR QUOTATIONS* 344–45 (Justin Kaplan ed., 16th ed. 1992). Then-Administrator of the U.S. Environmental Protection Agency responded to Jefferson’s advice as follows: “Easy for him to say. As we have seen, informing discretion about risk has itself a high risk of failure.” William D. Ruckelshaus, *Risk in a Free Society*, 4 *RISK ANALYSIS* 157, 160 (1984). Critics of the “deficit” model of science and society, which holds that a deficit of education is the main cause of public unease with new scientific and technological developments, rightly point out that education alone will not change people’s views that reflect a complex mix of values, emotions, experiences, and insights. See, e.g., Editorial, *Dealing with Democracy*, 425 *NATURE* 329 (2003); Geoffrey P. Lomax, *From Breeder Reactors to Butterflies: Risk, Culture, and Biotechnology*, 20 *RISK ANALYSIS* 747, 750–52 (2000); Susanna Hornig Priest et al., *The “Trust Gap” Hypothesis: Predicting Support for Biotechnology Across National Cultures as a Function of Trust in Actors*, 23 *RISK ANALYSIS* 751, 757 (2003) (reporting statistical results showing that less than 7% of the variance in public opinion

strongly held beliefs and initial impressions are highly resilient to revision even in the face of powerful contrary evidence.<sup>51</sup>

The public perception of science and technology subjects must, therefore, be considered cautiously given the high potential for such opinions to be influenced (if not dominated) by ignorance, misinformation, unwarranted emotional reactions, preexisting biases, and decision-making heuristics. Given this reality, there is an inherent tension between democratic decision making and effective risk management.<sup>52</sup> To minimize this tension, public participation mechanisms must include adequate provision for education and deliberation to ensure that the resulting public opinion is informed.<sup>53</sup> Of course, requiring education as a precondition of participation has the effect of severely limiting the number of people who can participate, thus retriggering the tension between fairness (including representativeness) and competency.<sup>54</sup> Moreover, public education is a necessary, but not sufficient, prerequisite for meaningful and effective public participation. We turn next to some of the other challenges for public participation processes.

## B. Other Challenges and Limitations of Public Participation

There are a number of other well-recognized limitations or problems with public participation in decisions involving science and technology. For example, if public contributions should be preconditioned on some basic level of education or knowledge, there are, as suggested in the previous section, potential problems with regard to the representativeness of the participants. More generally, there is

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on biotechnology could be directly explained by variance in knowledge); see also *supra* note 31 and accompanying text. Granted, education alone is not a panacea that will shift the public's appreciation of science, but some basic understanding of the relevant scientific issues is usually critical for effective and meaningful public participation.

51. See Slovic, *supra* note 41, at 405 (“[P]sychological research demonstrates that people’s beliefs change slowly and are extraordinarily persistent in the face of contrary evidence. Once formed, initial impressions tend to structure the way that subsequent evidence is interpreted. New evidence appears reliable and informative if it is consistent with one’s initial beliefs; contrary evidence is dismissed as unreliable, erroneous, or unrepresentative.”).

52. See Cross, *supra* note 20, at 888 (describing “a conflict between the goals of a democratically responsive government and an effective public health protection program”).

53. Laird, *supra* note 5, at 355 (“Uninformed choice is not a democratic exercise.”); SCI. ADVISORY BD., U.S. ENVTL. PROT. AGENCY, IMPROVED SCIENCE-BASED ENVIRONMENTAL STAKEHOLDER PROCESSES 8 (2001) (“An adequate treatment of science is possible in stakeholder processes, but typically only if substantial financial resources, adequate time, and high-quality staff are available from the outset to allow the necessary deliberation and provide the necessary support on an iterative basis through ongoing interaction with the stakeholders.”).

54. Albert Weale, *Deliberative Democracy: Science Advice, Democratic Responsiveness and Public Policy*, 28 SCI. & PUB. POL’Y 413, 417 (2001) (While deliberative techniques such as citizen juries, consensus conferences, and deliberative polling are supported by many proponents of public participation, “none of these techniques provides for the active involvement of all citizens in the making of decisions. Samples are simply too small to give the scale of civic engagement that classical republican conceptions of democracy aspired to . . .”).

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appropriate knowledge and edu  
deliberation.<sup>55</sup>

Participation might also b  
gender, or racial lines because o  
for participation. Many of the n  
weakened, or perhaps contradic  
of some segments of the popul  
participation is justified on the  
participate in the governance of  
frustrated if certain segments o  
circumstance, especially if the  
participants.

One prevalent concern is tha  
will be dominated by powerful  
already entrenched positions.<sup>56</sup>  
commitments, interest groups ha  
general public in having their v  
yet those interest groups may no  
congressional study found that  
public participation before fede  
groups accounting for the vast m  
democracy theory, emphasizing  
central role for organized intere  
strand, preferring direct democ  
citizens expressing and recon  
paramount importance.<sup>58</sup> For pr  
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55. See Jim Rossi, *Participation R*  
*Agency Decisionmaking*, 92 *Nw. U. L.*

56. See Fiorino, *supra* note 5, a  
participation mechanisms is the exten



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"ignorance" with respect to GM  
allow them into deliberation on this  
participation processes becomes  
the public decide that they have

in the rarest of cases, to provide  
science-laden policy issue. The  
different interests, perspectives, and  
controversial in the first place. Thus,  
although it may be attractive to aspire  
to do something to give real effect to  
the values present amongst the  
participation processes report achieving  
effort to achieve agreement often  
and watered down that they are

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an incident that occurred at the conference  
the conference room part way through the  
by shouting out the speaker and not allowing him to  
finish or convinced the protesters to allow the  
speakers would be given an opportunity to  
make a statement (which was noteworthy for its  
length). Conference participants attempted to engage  
the protesters abruptly stated that they were not  
interested. This provided a vivid illustration that some  
people do not provide a rational exchange of views.

PROPOSITION 2 (1965) (rational individuals will  
participate in issues where individual's participation  
outweigh the benefits); James S. Fishkin,  
"PARTICIPATION ANALYSIS MGMT. 128, 128 (2003);

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Public participation mechanisms are used to reach decisions. Providing an investment of time and resources to reap the benefits of public participation may incur costs and potential delays in making decisions.

Another issue is whether public participation leads to better decisions. This raises the substantive question of the quality of decisions and the consequences (e.g., failure) of a particular decision. Some studies usually involve process-oriented evaluations that attempt to define and apply.<sup>66</sup> Some studies are based on the opinions of participants about the participation process,<sup>67</sup> while others focus on the success of a particular mechanism. The success of a particular mechanism is often determined by specific factors such as the nature of the problem, the framework for the involvement of the public, and the quality of the process.

Finally, public participation mechanisms may have the opposite effect of exacerbating conflict between proponents of conflicting interests. "[e]mpirical research has consistently shown that rather than quell controversy, legal and regulatory processes instead of deliberating effectively, often do little or nothing. 'the public participation movement did very little to promote the process of decision-making, and in some cases corroded them, by reinforcing the adversarial confrontation.'<sup>72</sup>

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65. CHARNLEY, *supra* note 4, at 100.

66. See Caron Chess & Kristen M. L. Brown, *Do We Know What Works?*, 33 ENVTL. SCI. & TECH. 100 (1999).  
process goals used by some researchers.

67. See CARY COGLIANESE, IS SALES PROMOTION A VIABLE ALTERNATIVE IN REGULATORY POLICYMAKING (Johns Hopkins University, 1998).

of the primary public participation and their limitations. A common mechanism is the tension between the level of public participation and deliberation.<sup>75</sup>

An election by the populace is the one that James Madison argued in the Federalist Papers would "be most likely to be pronounced by the people as significant limitations as a republic." First and foremost, a relatively small number of people vote, and most voters do not know much about the candidates and their policies. Town meetings, direct mailings, and even workplace water cooler all increase the amount of attention focused on the candidates. The personal attributes and foibles of the candidates are discussed, there is little discussion of the substantive issues in the electoral process for most voters. They vote for a candidate rather than an issue, and they do not address, most voters have no interest in individual issues.<sup>77</sup> Election of a candidate, but not sufficient, requirement

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(Clinton Rossiter ed. 1961).  
who base their electoral decision on the  
e. Even those voters are then effectively

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for effectively connecting citizens with laden issues.<sup>78</sup>

## *2. Referenda and Initiatives*

As just discussed, one of the reasons citizens vote for a candidate rather than for a specific issue is that they are voting on specific issues of interest. In many states, on specific issues, states are increasingly being held hostage by binding propositions on specific issues. Making decisions on specific issues in which citizens can participate, referenda perhaps come closer to the ideal of direct democracy.

Yet, referenda and initiatives provide little assurance that voters will be educated. The voting process is a one-time event, unlike deliberative processes that provide a forum for citizens with different views.<sup>79</sup> Citizens are asked to vote "yes" or "no" on a strategically drafted amendment, negotiation, or compromise. It is a majority-rules decision that provides no feedback at the time, but which may be implemented. Referenda also fail to provide a forum other than as indirectly reflected in the ballot.

## *3. Public Notice and Comment*

The conventional mechanism for public participation is the Administrative Procedure Act's notice-and-comment process. While notice-and-comment is a cornerstone of administrative law, it has important limitations. It provides little participation. Notice-and-comment is often limited to interest groups and professional organizations, not ordinary citizens.<sup>82</sup> In the relatively few

on and traditional mechanism for the local, regional, state, and when they want to provide an in-person venue where different challenged. They can serve a variety at least the appearance of individual already made, warn the agency legal or procedural requirements, the public meetings are generally adopted a proposed course of in the scope and content of the t hearings often provide a useful ad to revisions or reversals of

ear to be a formality in which the tions of listening to the hearing position. Participants at such ized.<sup>87</sup> Public hearings also tend s, in which entrenched interest sition through whatever means

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a note 13, at 78 ("The common practice ng a decision has been done is cause for

outcome of public meetings] found that

forums may increase anger.").

gs tend to be dominated by organized [public hearings] may force participants ring process by organized interests can

### 5. *Reg-neg*

One of the primary initiatives for notice-and-comment rulemaking and deliberation on regulatory is "reg-neg."<sup>89</sup> The goal was to overcome the limitations of the traditional notice-and-comment rulemaking process by drafting by the regulatory agency a proposed rule with the participation of representatives representing the major interests affected. The process involves an extended period to develop the rule, during which the agency convenes the reg-neg also known as a "reg-neg" also publishing as a formal proposal for public comment and negotiation. The participants in the process begin at the beginning of the process before the rule is published and participate in an ongoing deliberative process with the agency, often competing, interests. The participants who are highly educated and have a strong interest in the rule.

While initially viewed with skepticism, the process has become more popular over the years. One set of issues that have been addressed by the committee. Controversies have been excluded. Moreover, the people who are excluded are those of entities with a direct interest in the rule, such as public interest groups, or government agencies, or those referred to as "stakeholders" as well as those who are not. While one or two individuals may be on the committees, this process generally involves the participation by the ordinary citizen.<sup>92</sup> Moreover, the process is a very time-consuming, expensive process, and the cost of the reg-neg process is often not covered by the agency imposing it unilaterally by the agency.

Notwithstanding these criticisms, the process has shown that negotiated rulemaking leads to more effective rulemaking.

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89. See generally Negotiated Rulemaking, *Negotiating Regulations: A Cure for Market Failure*, ed. by J. M. McMahon, *The Theory and Practice of Regulation* (1994).

90. See Fiorino, *supra* note 5, at 100.

ary committees can be established  
nonprofit organizations. In some  
advisory committee, is primarily  
address a specific issue or problem,  
and viewpoints in the community.<sup>96</sup>  
es include: providing an ongoing  
community representatives and the  
ings of strong community concerns  
isions through the incorporation,  
ed by the citizens' committee.<sup>97</sup>  
n of members and provide for  
ttees tend to meet regularly over  
o citizen advisory committees in  
ectively enhanced deliberation,  
but were not very effective in  
with citizen advisory committees  
the process and, therefore, not  
s.<sup>100</sup> Other potential problems are

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*the Actual Performance of Negotiated  
ary Coglianese, Assessing the Advocacy  
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and others).*

es, *supra* note 19, at 209-10.

*omption of Citizen Advisory Committees:  
IPETENCE IN CITIZEN PARTICIPATION 87,*

*upra* note 19, at 209-10.

os may become elitist, or otherwise lose  
at the general public will not support any  
"an important contradiction in the use of

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that the advisory committee recommend a decision to the decision maker,<sup>101</sup> or the advisory committee to address the issues.<sup>102</sup>

*7. Deliberative Polling*

Public opinion polling and focus group opinion on a wide variety of issues do not permit any transfer of information from the poll to the participants, nor do they permit any interaction or deliberation. These techniques to include focus groups, Deliberative polling involves (i) a first meeting where the participants express their opinions of the participants, (ii) a second meeting where the participants deliberate on their own, and (iii) a second opinion poll following the intense deliberation. The goal is not to reach any consensus or majority, but to reach individual opinions of the participants. The results of pre- and post-deliberation polls show a shift as a result of deliberation.<sup>103</sup> In a study of three to four hundred participants, the study undertaking that restricts its practice to a small group. On the other hand, this technique involves a representative sample of the population in a deliberative methods such as citizen juries.

*8. Citizen Juries*

Perhaps no idea has received as much attention as a mechanism for public participation in decision making. "citizen jury."<sup>104</sup> Citizen juries, s

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citizen advisory bodies in the American political system often become out of touch with the citizens they are supposed to represent.

101. Lynn & Kartez, *supra* note 9.

102. See Charr & Russell, *supra* note 9.



questioned by the citizen jury  
e, the jury members typically

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r presented at the 1998 Annual Meeting  
998), available at <http://policy.rutgers>.

e citizen jury mechanism in so-called  
f Technology, an agency of the Danish  
Jaeger, *Danish Participatory Models*.  
rds [sic] *More Democratic Decision-*  
tra note 110, at 4–5. The website for the

ncluding Greenpeace, the Consumers'  
juries in different regions of the United  
on GM foods and crops. See <http://www>.  
ored a citizen jury on GM foods in the  
oods, with the jury concluding that there  
ugh 6 of the 15 jury members dissented.  
l Should Be Available to Buy in the UK  
k/news/pressreleases/citizensjury\_result.  
he Internet, with “thousands of people”

nology, Citizens' Final Report Presented  
h added protections), available at <http://>

*Genetically Modified Foods*, available at  
, 1998). This “Citizens Conference” was  
ld in the National Assembly. It received  
nal report rejected a moratorium on GM  
s including labeling of GM foods and  
ams for GM foods. *Id.*

*Conference Model in Switzerland and*  
NOTES 57, 59–60 (2001) (favoring gene  
e international economy but identifying

E SAFETY & ETHICS OF GENETICALLY  
GM foods calling for stricter regulatory  
\_Report.doc (Nov. 14–16, 1998).

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deliberate among themselves and reach a consensus model.

Citizen juries are based on the expenditure of necessary time and resources to address complex concerns and making recommendations. The citizen jury provides a vehicle for the participation of ordinary citizens.<sup>120</sup> This mechanism involves an engaged group of "ordinary" citizens, not selected or tainted by any pre-existing involvement in the issue. Unlike other public participation mechanisms, such as inclusive of, interest groups, voluntary advisory committees, and public consultation processes.<sup>121</sup>

The citizen jury mechanism is a unique form of public participation. Citizen juries are time- and resource-intensive, typically involving a small number of citizens.<sup>122</sup> Their value is derived from the citizen jury having some latitude in their recommendations. Citizen juries usually report their findings to the decision maker. Yet, the major commitment of the citizen jury would hardly be worthwhile if the decision maker. In countries such as Denmark, Sweden, and Norway, the citizen jury and institutional mechanism for citizen juries often carry significant weight in government decision makers.<sup>123</sup> Citizen juries convened ad hoc by nongovernmental organizations have a significant impact on the general public,<sup>124</sup>

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119. Leroux et al., *supra* note 3, at 120.

120. Andersen & Jaeger, *supra* note 3, at 121.

121. Leroux et al., *supra* note 3, at 122.

122. The first citizen jury in the United States was convened in the United Kingdom (which involves a cost of approximately average approximately \$150,000 (U.S. dollars)).

123. Fiorino, *supra* note 5, at 23.

124. Of course, a citizen jury may receive broad media coverage that helps to raise public awareness of the relevant issue. This type of public participation

Bias can result from the self-  
sources in which the solicitation is  
explicit bias by the conference  
applicant pool. Given that most  
organizations with a clear policy  
may be suspect given the many

ns. For example, it is not always  
controversial social and policy  
participants to come to some  
and generic that it has little or

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f their deliberations. *Id.* at 31; Fiorino,

of jurors and expert witnesses can bias  
("Subtle changes in the way that risks  
isions."). A vivid example of the subtle  
erts, even when an attempt is made to  
panels held across Canada sponsored by  
otransplantation. Three of the citizen  
ation, while the other three panels with  
.See James R. Wright, Jr., *Alternative  
onsulting the Canadian Public About*  
10, 41 (2002).

describing the process for a consensus  
candidates responded to a solicitation  
independent radio stations, and then  
o-demographic criteria such as age, sex,  
of jury participants suffer similar self-  
ogy selects participants by sending out  
the respondents. Only 120–150 of the  
substantial self-election. Andersen &

uitment method . . . may not ensure  
ady interested in the topic will offer to

the tight hold that decision makers  
undermine its legitimacy").  
x et al., *supra* note 3, at 468.

no value.<sup>134</sup> The small number of participants has a potential for significant fluctuations in results. The chance selection of one or two participants who are rare in the population could seriously bias the results. Juries may be most useful in gathering information where there is no correct answer or where a counterproductive impact on public participation in these issues and do so erroneously.<sup>135</sup>

### *9. Internet Consultations*

The Internet offers interesting opportunities for consultation and deliberation. Online surveys or referenda, for example, are possible for large numbers of participants and are inexpensive and easy. These methods have scope, breadth, and depth of participation that allow stakeholders during policymaking. There are caveats about online consultations. The accessibility of the Internet facilities may also limit the ability to control the process. It may not be representative of the target population. Large organizations could dominate the

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134. The consensus statement developed by the National Commission on the Future of Telecommunications policy, was reported in *supra* note 110, at 15. Citizen juries could be used to produce recommendations that are more representative of participants. Andersen & Jaeger, *supra* note 110.

135. For example, two citizen juries were convened by organizations including Greenpeace, to evaluate the safety of GM crops. Their findings that "GM crops make farmers more dependent on GM Jury Calls for "Moratorium" on GM crops. *Available at* [http://www.gmjury.org/docs/gm\\_jury\\_report.pdf](http://www.gmjury.org/docs/gm_jury_report.pdf). A growing body of data demonstrating the environmental harm of environmentally harmful herbicides and pesticides. *Why U.S. Farmers Have Adopted Genetically Modified Crops*, 3 *AGBIOTECHNET* Feb. 2001, at 1.

The stated objective of this  
ive, effective and deliberative  
e public, against the background  
ps in the UK and the options for  
ue and innovative nationwide  
and effective opportunities to  
ation people may want and need  
ling exercise or a mini-referen-  
tunity to register their views.<sup>144</sup>  
e identified need to involve the  
cess for GM foods, in contrast  
who had generally dominated  
c Debate provides a useful case  
ons of attempts to involve the

ation with a body representing  
ok a scientific study of GM  
le Evaluations (FSE). The study  
sity on the farm. The effects on  
en areas planted with GM crops

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ential challenge with online methods is  
ured listening' to so many individual

[www.gmpublicdebate.org.uk/](http://www.gmpublicdebate.org.uk/) (last visited  
GM Nation? The Findings of the Public  
was released in late September 2003 and  
Nation\_FinalReport.pdf.  
C DEBATE FINAL REPORT, *id.* at app. B

142, at 11.  
g people at the grass roots level whose  
GM foods. *Id.*

and areas planted with their governmental advisory body Biotechnology Commission (A report on the regulatory process Trial."<sup>148</sup> One of the key recommendations crucial for the public to be involved taken" concerning GM crops informed public discussion of the agencies."<sup>149</sup> The agency responsible Environment, Food, and Rural Affairs in May 2002 and announced crops.<sup>150</sup>

## **B. Structuring the Public Debate**

In July 2002, DERFA Secretary "government wants to provide openly and reach their own judgment balanced" discussion.<sup>151</sup> She scheduled to begin in the autumn budget of £250,000.<sup>152</sup> The debate Public Debate Steering Board (headed Professor Malcolm Grant. Professor including members of nongovernment the health profession, consumer scientific communities, in a variety viewpoints.<sup>153</sup> The initial announcement specifics on how the debate would of developing an implementation GM Public Debate, the government

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146. AGRIC. & ENVT. BIOTECH. COM. <http://www.aebc.gov.uk/aebc/pdf/crops>

147. The Agriculture and Environment strategic advisory body on biotechnol

Willbourn Research Develop-  
foundational workshops. Cor-  
d the nine workshops convened  
Wales, Scotland, and Northern  
ed to extract issues of public  
ard in preparing for the main

rkshops, Professor Grant wrote  
g the initial £250,000 budget for  
t the next phase, which was to  
d arrange for deliberation of the  
onal funding. Professor Grant  
der to deliver a credible and

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*Interaction of the GM Public Debate, The*  
*, at <http://www.gmnation.org.uk/docs/>*  
*The website for the Science Review,*  
*<http://www.gmsciencedebate.org.uk/> (last*  
*of GM foods, conducted by the Strategy*  
*[www.number-10.gov.uk/su/gm/index.htm](http://www.number-10.gov.uk/su/gm/index.htm)*

*Programme of Workshops to Plan GM*  
*[gmpublicdebate.org.uk/docs/pr141102.doc](http://www.gmpublicdebate.org.uk/docs/pr141102.doc).*

*Kingdom's executive agency in charge of*  
*[www.food.gov.uk/homepage/index.html](http://www.food.gov.uk/homepage/index.html) (last*

*[www.gmpublicdebate.org.uk/](http://www.gmpublicdebate.org.uk/) (last visited*

*at <http://www.gmpublicdebate.org.uk/>*

*Findings of the Public Debate, at*  
*(visited Oct. 29, 2003).*

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effective debate.<sup>161</sup> In February 2003, the Government spent £250,000 and agreed that DEFRA would fund the debate. Notwithstanding this grudging contribution, the debate undermined the public credibility of the Government.

The Board also voiced concerns about the timing of the debate. The results of the debate were due in late 2003, one month after the completion of the June 2003 deadline, the Board feared that the results would undermine the public debate.<sup>164</sup> These concerns were expressed to Minister Mike German, who agreed to delay the debate in order to integrate the results of the debate with the Welsh Assembly, and Northern Ireland. The Government requested a delay to the start of the debate until after the participation of the entire U.K. In February 2003, in addition to the concerns of the Secretary Beckett extended the deadline for the debate. Despite the increased budget and the increased time and short time line for the public debate, for example, the independent steering committee of the public debate expressed concern that the Government would not conduct the debate properly.<sup>168</sup>

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161. Letter from Malcolm Grant to the Honorable Margaret Beckett, Secretary of State for the Environment (2002), at <http://www.gmpublicdebate.org.uk> [Grant]. One estimate reported in the media was that the cost of a proper national debate. Mark Townsend, *Sham*, THE OBSERVER, Nov. 10, 2002, at <http://www.guardian.co.uk/0,6903,837259,00.html>.

162. Letter from Margaret Beckett to the Honorable Margaret Beckett, Secretary of State for the Environment (2002), at [http://www.gmpublicdebate.org.uk/ut\\_09/ut\\_9\\_404.htm](http://www.gmpublicdebate.org.uk/ut_09/ut_9_404.htm).

163. See, e.g., Press Release, Friends of the Earth (2003), at <http://www.foe.co.uk/resour>.

164. Letter from Malcolm Grant to the Honorable Margaret Beckett, Secretary of State for the Environment (2002), at <http://www.gmpublicdebate.org.uk> [Grant]. The letter expresses concerns that the June 2003 deadline for the debate would undermine the public credibility of the Government.



ally commenced and continued  
onsisted of a series of confer-  
K. The program of events was  
apture a wide range of opinions  
ial about GM foods, including  
national CD-ROMs, and a film  
cussion.<sup>172</sup> The most prominent  
ree in England and one each in  
w a total of approximately 1,000  
nty meeting were undertaken in  
local organizations were also  
orms that solicited participants'  
ngs and were available through

arious size were held across the  
3,340 people returned feedback

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resources than those that had been given  
bers were gravely disappointed that the  
o achieve the public debate's stated

aningless" Until Government Halts GM  
[www.genewatch.org/Press%20Releases/](http://www.genewatch.org/Press%20Releases/)

escends into Farce (Nov. 29, 2002), at  
1129004345.html.

MORNING NEWS (Oct. 21, 2002) ("All  
t another public relations exercise. . . .  
se, revealing the best way to 'manage'  
oted as saying 'the decision has already  
food/wm211002.txt.

Debate Starts (June 3, 2003), *available*  
PUBLIC DEBATE FINAL REPORT, *supra*

42, at 14–15.

ote (Feb. 26, 2003), *available at* <http://>

42, at 14.

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forms from such meetings, and people may have attended the meetings completed and returned, including from the Internet or after being invited additional members of the public Debate.<sup>178</sup>

Recognizing that the main forms (writing, e-mails) had the potential given the self-selection involved, a parallel component consisting of randomly selected involvement in the GM control issues from a typical cross-section of participants, it was referred to as the Debate.<sup>181</sup>

Despite the grand ambition, the initiative was widely criticized in the media for its effectiveness.<sup>182</sup> As one British newspaper noted in a national debate: "It's obscure; it hasn't been nationally advertised—in fact, it's forgiven for thinking the government

## **F. The Final Report**

The Final Report of the Government in 2003.<sup>184</sup> The major finding of the report was that the public is uneasy about GM foods.<sup>185</sup> According to the report, the public is most clearly from the Public Debate. The public are cautious, suspicious or out-

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176. *Id.* at 25.

177. *Id.* at 30.

178. *Id.* at 15.

179. *Id.* at 14 ("We recognised that the public can provide evidence of views from only a

...ic who otherwise did not elect  
...at the general population does  
...GM of many active debate  
...ow-But-Deep also expressed  
...me even stronger with further  
...ertain about their concerns than  
...Debate. They were also much  
...f GM foods.<sup>192</sup> This difference,  
...e and the randomly selected  
...evidence cited in the Final Report  
...nately influenced by organized

...an ambitious and impressive  
...M foods. There is no doubt that  
...in increasing the awareness,  
...is with respect to GM foods. It  
...ebate will affect governmental

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...commented on the number of people who  
...felt themselves well informed about it,  
...the general public. People complained  
...ated by partisans for and against GM  
...ckers suggested that some meetings had  
...ers there were complaints of excessive  
...("We believe that some organisations,  
...e and the Soil Association encouraged

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Despite its ambitious and unmet goals, the Public Debate had significant shortcomings and was mired in controversy. The Public Debate effort likely involved more citizens than any other effort on GM foods, only a relatively small number participated, and most of those who did participate were engaged in the GM issue.<sup>194</sup> As a result, the Public Debate during the Public Debate attempt failed to advance true deliberation between citizens. Indeed, the Public Debate involved citizens holding different views in an adversarial position. Rather, the Public Debate was a process of people sending letters or e-mails to express their predetermined opinions to be tested and developed.

For these reasons, the actual process did not live up well with its stated objectives. The Public Debate was intended to be "an opinion poll that would lead to a final report and most of the meeting was a one-way way."<sup>196</sup> The Public Debate was intended to be a process of activists who were already having their own views being dominated by advocates of GM foods. The Public Debate sparsely from the "general public" and was not an "innovative, effective and deliberative process" with very little deliberation, and simply a process of predetermined opinions.<sup>199</sup>

The Public Debate also suffered from a lack of transparency, manipulation and insincerity. The Public Debate Board over organizational issues, the Public Debate line, and the possibility of government involvement in the debate, all undermined the credibility of the Public Debate.

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194. A U.K. biotechnology industry group claimed that the cluster analysis produced by the 37,000 feedback forms can be clearly seen. ABC, *GM Nation?*—"Public Meeting on GM Foods," *ABC News*, 1998.

.K. debate immediately drew  
arm, the COI.<sup>203</sup> Second, any  
and given the proper time to  
ed by internal disagreements  
issues, seriously jeopardizing

gs strategically, playing up the  
position, while attempting to  
they fear the outcome will be  
roups helped to undermine the  
uncing the debate as a "sham,"  
rocess, while at the same time  
members and supporters to  
ould seek a favorable outcome  
ne same time using their public  
were unfavorable. Finally, the  
orting event in which one side  
eliberative, consensus-seeking  
ng participants to their prior  
l nature of the event.

red to have been a disappoint-  
process, the U.K's experience  
ttempts to engage the public on  
ods.

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COI and Statement by the GM Public  
[uk/gmdebate/steering\\_board.asp](http://www.foe.co.uk/gmdebate/steering_board.asp) (last

*Experts*, DAILY MAIL (London), Aug.  
[food/dm220802.txt](http://www.foe.co.uk/food/dm220802.txt).

mmment Launches GM Debate (June 3,  
while at the same time urging active  
[http://www.foe.co.uk/resource/press\\_](http://www.foe.co.uk/resource/press_)  
c Information Network, Urgent: Please  
with authors).

## V. SUGGESTIONS

From this brief summary of experience with public participation and a somewhat confusing range of public.<sup>205</sup> The trend today is clear: there is genuine two-way communication well as among citizens.<sup>206</sup> The longstanding tensions between public participation processes are necessarily limited to a relatively adequately informed to be effective a public participation process including:

*Sponsorship.* One or more interest groups, media organizations can sponsor such processes, but as the U.S. also raise concerns about the participation.

*Purpose.* Public participation objectives, including: (i) to monitor for input into decisions by others, (iv) to solicit public (vi) to educate participants.

*Geographical Scope.* Participation national, or international in national level when the issues efficiently addressed in a similar other issues that may be affected ecological and economic efficiency consideration.

*Participants.* Some "public stakeholders, consisting of personal interest in the outcome even exclusive participation with no previous involvement

...satisfy every democratic  
satisfy the ideal (and often  
cause no single practice in itself  
ry. But individual practices can  
s more or less likely to move a  
list of recommended practices  
mentation and context-specific  
f efforts, some will seem more  
be emulated more often. A  
should not close out further  
ble outcome, nor a realistic  
; or their instruments. Broad  
not squelch further practical

encouraging flexibility and  
hes, there is a need to bring  
tion undertakings. Openness to  
port that enables experimenta-  
mentation. In the United States  
generally ad hoc undertakings  
academic, and organizational  
ation for these many different  
the general public, the media,

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attempts to evaluate which formats for  
ACTERIZATION, *supra* note 13, at 76  
public participation, deliberation, and  
l empirical analysis that relates the  
ne problem being addressed, and the  
s selection in the future. *See* Fiorino,  
stitutional policy analysis that relates  
policy problems.”).

3, at 96 (“[I]t is not possible to predict  
given situation. Deliberative methods  
e on its users and the setting in which

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and policymakers.<sup>211</sup> Two close colleagues of the Danish Board of Technology, a world leader in innovative public participation, is "one, indispensable criterion

This is that the policy-makers are available and willing to listen and respond to the public. This also means that the process has credibility with the public. It requires participants to give the required input to the outcome.<sup>212</sup>

A central coordinating body, perhaps with the responsibility for identifying technology issues with important public health issues, is the best approach for bringing participatory processes in the United States.

The establishment of a central body in this format of public participation is, in contrast, contrary, the central coordinating body would provide methodologies and experimental design. The central body would provide the framework for the processes. Of course, a critical role for the central body, if any, the output of the process would be sponsored by the central body.

A greater emphasis on new forms of public participation promise for new forms of evidence-based decision-making and deliberation. An example is the use of citizen juries in pharmacogenomics that would involve a small group of participants in the decision-making process.<sup>213</sup> Citizen juries, with a few hundred participants, conducted

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211. See Jasanoff, *supra* note 4, for a discussion of the role of the public in the development of new technologies. It may be too *ad hoc* or issue-specific to be a general model.

212. Andersen & Jaeger, *supra* note 1.

213. As an analysis of the first citizen jury, see the following, which successfully mapped the format of



means that our understanding is  
may be subject to revisions on  
undermined by this concession  
. Similarly, we should regard  
means to promote a fundamental  
red vigilantly and continually  
Enabling public participation  
er complete.  
rticipation as a goal that, once  
er, it is a process that requires  
s (certainly more than we have  
f methods and content. It is an  
al and creative attention.