

Adoption and Governance of Biotechnology in Democracies

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Not long ago food biotechnology¹ appeared to hold the promise of a second 'Green Revolution.' Food biotechnology may still be the answer to the need for a sustainable global food supply, yet the revolution is sputtering. GM corn, canola and soybeans are in commercial production, but GM table foods such as potato and salmon are in various degrees of limbo, far from consumer acceptance. AquaBounty Technologies' AquAdvantage salmon² is ready for evaluation as 'substantially equivalent' to non-GM salmon and for that reason acceptable as food. Regulatory agencies are gearing up to take GM salmon seriously: the Canadian Food Inspection agency recently announced that "Health Canada had committed \$.19 million to research on genetically modified fish in 2002-03, and has committed \$.3 million for 2003-04" (Government of Canada, 2004, 8). But will anyone eat it? We don't yet know. The question is a little clearer in the case of GM potatoes: in Canada, six varieties are approved for human consumption. Yet their owner, Monsanto, does not appear to have convinced any commercial producer to grow these potatoes.³ Producers can scarcely be blamed, since they are in turn dependent on the will of distributors, processors, retailers and ultimately consumers. So far, no one actor appears to be willing to champion presentation of GM potatoes or salmon to consumers.

This hodge-podge pattern of consumer acceptance should be quite worrying to any food biotechnology advocates who supposed a regime of risk assessment, and perhaps labeling, might ease the pressure against food biotechnology introductions. There is something more to consumer worries than assessment of risk, and certainly something more than sheer power politics amongst titans of industry and bands of activist private citizens. There is a more general, unfocussed and inexplicit unease. Here I explore the suggestion that a significant component of the unease is grounded in a particular commitment to and conception of *democratic accountability and control*. The democratic accountability and control objection to food biotechnologies is not that they are unduly risky or that individual citizens' capacity for autonomous choice is not assisted by practices such as labeling. Rather, the objection is something much less choate and much more difficult to address: a quite visceral sense that a

fundamental aspect of our capacity for self-determination is infringed by the existence of institutions which narrow our range of food choices without a debate extending beyond legislatures and into moral communities. This sense may be accompanied by a further sense of lack of control over those institutions that serve as individual citizens' surrogates without the clear accountability and review process associated with elected representatives.⁴

If this is a reasonable characterization of one kind of objection, we have not just the grounding of a research question but an explanation of one ground for the biotech commercialisers' reluctance to introduce GM salmon, GM potatoes, and so forth: they may want a stronger indication of social acceptance of food biotechnology than can be provided by existing government agencies.

My purpose here is to build a procedural response to the objection from democratic accountability and control, without worrying a great deal about its precise magnitude relative to other concerns about food biotechnology introductions. My response will be built out of reflection on the relationship between three separable discussions: one about the nature and place of citizen engagement in democracies, another about the use of the new information communication technologies (ICTs) to enhance citizen engagement, and a final reflection on the kind of citizen engagement best suited to considering policy and governance issues raised by food biotechnology introductions.

1. Citizen engagement in democracies.

The suggestion I explore in this paper is deeply rooted in a closely related question: the question of why political participation by citizens of democracies is dropping, or at very least changing. Voting, in particular, has declined in the member states of the Organisation for Economic Cooperation and Development (OECD), as has the proportion of citizens willing to say that they have confidence in their government (Nye, Zelikow and King, 1997; Farr and Putnam, 2000). Democratic disengagement is worrying for at least two compelling reasons beyond the immediate loss of the barely tangible benefits of civility, neighbourliness, and so forth in civil societies. There is a short-term worry that citizens who do not engage with governments will fail to know and comply with laws, with an attendant loss of efficiency and predictability in our economies and social lives. The more fundamental worry is that the legitimacy of governments' claim to authority may collapse when they can no longer demonstrate that their claim rests on the democratically demonstrated consent of the governed. Who knows what will happen in even historically peaceful states if the people feel the government lacks democratic legitimacy? Recall the heated confrontations

between protesters and state officials in recent economic summits in Seattle, Geneva, Quebec, and so on.

Food biotechnology introductions provide a useful, concrete example of the kinds of problems faced by liberal democracies whose justification lies in part in their preservation of a certain range of civil liberties. As a matter of democratic accountability, legitimate introduction of autonomy-affecting food biotechnology requires a way of showing that individual persons count in the process and in that way retain genuine authorship over their own lives. I described the democratic accountability and control objection as having a visceral and inchoate core, and by that I did not mean to denigrate the objection but to mark its importance as an objection at the felt core of our autonomy. Choice, preparation, and consumption of food are frequent and universal human activities, at the core of many of our major cultural rituals. The importance of these rituals may in some sense be overstated, but the point is that autonomous individuals have chosen these overstatements and view their capacity for self-determination as closely connected to their capacity to choose a way of life which includes certain food choices.

Citizens' disaffection has been noticed, and governments are trying to find new ways to engage citizens in ways that emphasise the accountability of governments to citizens, and citizen control over choice of policies and governance mechanisms. An influential 2001 publication from the OECD provided the first institutionally-sanctioned gathering of ideas to emphasise a new governance relationship in democracies: the idea of citizens as partners. The idea has gained considerable currency in Canada (Lenihan, 2002), in contexts ranging from plans for public-private-partnerships (so-called 'triple P' arrangements) to new models of distributed public governance (Fyfe and Fitzpatrick, 2002), and renewed efforts to consult citizens on major policy issues in health (Health Canada, 2000). My question here is whether citizen engagement mechanisms can provide us with a way to respond to the democratic accountability and control objection to food biotechnology introductions, so let me turn now to the details of the OECD model.

2. ICTs and citizen engagement.

Here is the OECD model of what it is to engage citizens:

Information is a **one-way relationship** in which government produces and delivers information for use by citizens. It covers both "passive" access to information upon demand and delivers information for use by citizens and "active" measures by government to disseminate

information to citizens. *Examples include:* access to public records, official gazettes, government websites.

Consultation is a **two-way relationship** in which citizens provide feedback to government. It is based on the prior definition by government of the issues on which citizens' views are being sought and requires the provision of information. Governments define the issues for consultation, set the questions and manage the process, while citizens are invited to contribute their views and opinions. *Examples include:* public opinion surveys, comments on draft legislation.

Active participation is a **relation based on partnership** with government, in which citizens actively engage in defining the process and content of policy-making. It acknowledges equal standing for citizens in setting the agenda, proposing policy options and shaping the policy dialogue -- although the responsibility for the final decision or policy formulation rests with government. *Examples include:* consensus conferences, citizens' juries (OECD 2001, 23).

This model is explicitly connected to use of the new ICTs to improve government-citizen communications. A March, 2003 Policy Brief from the OECD introduces methods of "Engaging Citizens Online for Better Policy-Making" as the prelude to release of a monograph implementing the three levels of engagement using ICT-enhanced techniques (OECD, 2003).

It is difficult to offer measured response to this model, since it is revolutionary from one perspective, yet retrograde from another. The OECD's work assumes the enduring existence of its members as sovereign representative democracies. In that context, the proposal to give equal standing to citizens in policy dialogue is quite startling. While the implementation Handbook accompanying *Citizens As Partners* quietly describes "direct democracy" as "beyond the scope of the present handbook" (OECD 2001, 36), the idea of partnership with citizens represents a significant change to the role of representatives. Yet from a broader perspective this model of engagement embodies significant unresolved tensions, leaving it rather less revolutionary than it might at first appear.

Some of the tensions I will discuss are implicated in questions regarding best use of new ICTs to enhance citizen engagement. In finding ways to resolve tensions identified, I hope to find simultaneously ways to best use ICTs to enhance citizen engagement to respond to the democratic accountability and control objections. I will examine three particular tensions, beginning with the nature and roles of

representatives, majorities, and minorities. The second tension involves the problem of scale in finding meaningful individual participation in large-scale political activities. The third tension is within the idea of state sovereignty presumed as fact by the OECD.

The first tension arrives with the failure to make explicit just what happens to the role of representatives as citizen engagement changes citizens' expectations. The flashpoint for this tension will likely occur at the gap between policy-making and decision-making by representatives. In each stage of the engagement model, final decision-making authority is reserved for 'government' – an ill-defined object that presumably includes both legislative and executive dimensions of government and the tensions between them. It is far from clear how retention of decision-making authority by representatives and non-elected officials is compatible with active participation. Citizens who have shaped the policy agenda reasonably expect to see their intentions reflected in policy decisions, else the exercise amounts to an autonomy-denying 'tell and sell' of settled policy choices. Retention of decision-making authority by governments simply recreates in a different way the government vs. citizen opposition implicated in the current mutual alienation of citizens and government. Further strains may emerge as participation mechanisms cope with the age-old problems of democracies, trying to assess fairly the concerns of minorities and majorities without allowing one to tyrannise the other. The 'new' mode of citizen engagement on policy issues may fail to resuscitate failing allegiance to government because the method of engagement is too closely tied to a policy cycle inextricable from the advisory approach and its connection to the enduring question of the proper relationship between constituents, policy advisors, and representatives.

A second tension arises as use of ICTs reduces barriers to political participation and a new 'partnership' model promises institutional arrangements to make participation more meaningful. New incentives and reduced participation costs may lead more citizens to participate in formal political institutions. As more citizens participate, it is increasingly difficult to organise their contributions in ways which fairly and reasonably group like-minded citizens' views together, yet leave apart and mark for special attention those views which are held by only a few yet merit serious consideration. This problem of scale becomes especially acute in two-way communication and in citizen-to-citizen dialogues. ICT-enhanced engagement of citizens is attractive in part because it removes barriers of time and geography while providing different methods of presenting and discussing information, yet the problem of scale generates a number of solutions that again bring fresh problems or replicate existing problems. ICT-tools such as

natural language processing may soon provide ways of analysing the language of citizens' contributions to provide an automated grouping of families of opinion. This is of little help, however, to a process of actively shaping policy where citizens want to speak to one another to deliberate over problems and not merely to inform government of opinions.

Solutions to the problem of scale are remarkably open to serious objection from understandings of democracy that take it to be justified by its connection to preservation of individual liberties.⁵ Consensus conferences,⁶ and deliberative polling⁷ have been advanced recently as consultative devices readily adapted to delivery via ICTs. Deliberative polling involves a representative group of citizens who engage a policy issue over time, working together in various ways to develop a response to the issue. The group's deliberations are often guided by a mediator or facilitator, and changes in the group's views are often tracked by surveys or interviews at various points in the group deliberative process. Deliberative polling undeniably exhibits some virtues. It is cost-effective in the sense that delivery of the program involves relatively few participants and a relatively small amount of data. And while participants do contribute a significant amount of time over the course of a deliberative polling exercise, the small-group focus means that other citizens are freed from the burden of learning about issues, negotiating with other participants, and so forth. In this way deliberative polling may contribute to avoidance of 'consultation fatigue' among citizens. The largest benefit of deliberative polling is not, however, in these cost-reduction measures, but in its fostering construction of a deeper picture of citizens' preferences.

These benefits are nonetheless likely outweighed by some countervailing considerations regarding representation and democratic ideals. Part of the tumultuousness of democratic participation is derived from the difficulty of knowing in advance just who will exercise an option to participate in voting, plebiscites, or other activities. The class of citizens politically engaged with respect to any issue is self-selecting, and not the product of a deliberate attempt to devise a representative group. The point here is that the process of deliberative polling is not neutral as a matter of political morality: it embodies a commitment to a certain kind of participation. Similarly, generalisation from a small group relies on other assumptions open for question or manipulation. The particular interactions seen in deliberative polling groups may in fact be preference-forming, and not just preference surveying, in ways which distort findings as the group is disanalogous to the full political process of a given society. For example, trade-offs made between individual members of a group selected as representatives of larger social groups may be subject to interpersonal

dynamics not present in group-to-group interaction in the wider political sphere.⁸ Here we arrive at what I take to be the strongest argument against activities such as deliberative polling: these activities understand democratic process as preference identification rather than preference identification *and choice* and in this way deny or at least deemphasise the value of active individual participation as a matter of authorship of one's own life (Raz, 1985, 470). This depends on a presumption of the value of a robust conception of autonomy, but such conceptions are readily available in the work of scholars such as Joseph Raz, and such conceptions are arguably evident in constitutional documents of various democracies of the kind under discussion here.

Let me run out more briefly the same kind of objection to consensus conferences, guided attempts to reach consensus on some issue. To the extent that consensus is the goal, these conferences presuppose its possibility or positive value. This presupposition carries very specific, anti- or non-liberal commitments regarding the nature of democracy, pluralism, and value conflict – in particular the presupposition that with respect to the issue engaged, it is worth spending time seeking consensus. This is not to say that these are not defensible commitments, but it should be observed that consensus is controversial and not essential to respect for democratic accountability and control. In pursuit of consensus there is a danger that democratic debate may be reduced to mere management of conflict, and worse, reduced to professional management of opinion in a way which counts dissent as an aberration to be smoothed over. (I shall speak more of this in a moment when I return to the question of the kind of debate needed for democratic deliberation regarding food biotechnology introductions.)

The third tension in the OECD engagement model comes from the other half of the OECD's assumption regarding the social context of consultation: that representative democracies operate in sovereign states. Yet the scope of state sovereignty has diminished significantly in the gradual globalization of economic markets and the equally gradual development of a web of global treaties enabling international commerce at the cost of state sovereignty. Put simply, treaties bind states in ways which may be beneficial yet nonetheless represent a constraint on state action. In an age of interdependence and global trade agreements which constrain state sovereignty, engaging citizens or publics is increasingly difficult. Meaningful participation requires more knowledge than ever before, and more importantly, policy problems arising often cross national borders to include international publics. One immediate example of this phenomenon can be seen in the banning of Canadian beef from US markets on the grounds that Japan has banned Canadian beef on suspicion of BSE infection, and the US and Canadian production systems are so closely intertwined that once Canadian beef enters the

US it is no longer readily distinguishable from US beef. Some governments' activities explicitly recognise the fact of increasing interdependence, but many have yet to adapt. The new Scottish Parliament, for example, hears petitions on any matter within its jurisdiction without restriction as to the origin of the petition.⁹ I shall return to this point below so I will not press it further here – publics and issues are no longer easily contained in sovereign states, largely because issues and political philosophies are shared by publics across sovereign divides made porous by globalization.¹⁰

3. Food biotechnology introductions.

It should be unsurprising that my response to the democratic accountability and control objection does not rely on either of the first two stages of the OECD's model of citizen engagement. There is an air of false gift-giving about the idea that provision of information to citizens is in some way a novel improvement of engagement in the context of democracy. Even on a quick formulation of democracy as government of the people, by the people, for the people, there is the clear implication that citizens *must know* of the activities and options of government since those activities are for the sake of citizens and chosen by citizens. Surely it is part of the *core* of the nature of any functioning democracy that citizens are provided information by government in order to make choice meaningful, and not as part of an optional or improved strategy of engagement. More pragmatically, from a political standpoint, the existence of the objection rules out engaging citizens regarding food biotechnology introductions through offering further information regarding government approval processes. It is probably naïve to suppose that more information about governance processes will defuse objections to their existence. More information may be treated as little more than an opportunity to develop a more detailed pathology of a failed system.

Further consultation is equally unlikely to provide a satisfactory response to the objection. If I have the nature of the objection right, a merely consultative process cannot be satisfactory so long as governments retain agenda-setting and decision-making authority, and fail to engage in a kind of partnership which offers both capacity to contribute and power to ensure that contributions are meaningfully reflected in eventual policy. An objection from accountability and control can only be met by sharing of authority, as depicted in the third level of the OECD model. Anything less fails to protect the capacity for self-determination characteristic of democratic decision-making. (Consider the recent uproar in Glasgow when only 150 tickets were issued for one of six national conferences on GM introductions (BBC, 2003)). Active participation is needed,

and active participation with respect to complex issues requires deliberation. Once again we encounter the problem of scale. We must ask how a deliberative and decision-making partnership between citizens and government can overcome the problem of scale within constitutional and policy constraints of representative democracies inclined toward gradual and not dramatic institutional reform. In the specific context of food biotechnology introductions, the problem of scale is not just the technical problem seen in design of ICT-enhanced consultation. A politically viable and democratically justifiable mechanism for active partnership must incorporate a place for representatives while recognising the impact of globalisation of markets and treaty-driven interdependence. The mechanism must also find a place for more local concerns – regional and cultural variations that may result in ineliminable value pluralism in the future if not now. And, of course, the solution must balance respect for self-determination against benefits of efficiency and predictability achievable under widely shared standards.

I think there is a fortunate convergence between the useful aspects of the new ICTs in enhancing deliberation, and some of the political and economic pressures bearing on the changing nature of sovereign states. The interdependence of states has been accompanied by what is sometimes called a ‘hollowing out’ of the state, as states are bound by increasingly by international agreements and devolve internally. As legal theorist and European Parliament member Sir Neil MacCormick put it, “Whenever we should date the emergence of the sovereign state, and wherever we may locate its first emergence, it seems that we may at last be witnessing its demise in Europe, through the development of a new and not-yet-well-theorized legal and political order in the form of the European Union” (MacCormick, 125).

Internal devolution occurs in various ways for various reasons. Devolution can be driven by nationalist sentiment, often the root of a drive for self-determination made possible by increased communications capacity and globalization of markets. Equally pressing reasons can be found in central governments’ view of devolution as a way to foster greater efficiency, transparency, and accountability in governance practices. Britain’s place within the European Union stands as a useful example of the hollowing out of the state. The Judicial Committee of the House of Lords is no longer the court of final appeal, as European bodies supersede that court, and at the same time Scotland has recovered its Parliament after a three hundred year interval, and Wales is receiving a legislative assembly. More interestingly, outside these nationally driven changes, the Northeast of England has received a long-awaited assembly whose justification rests both on historical identity and a sense of economic self-determination. All of this leaves

us with fresh options in responding to the multiple dimensions of the problem of scale. Again I borrow from MacCormick:

The end of the sovereign state creates an opportunity for rethinking of problems about national identity. The nation as cultural, or linguistic, or historical, or even ethnic community is not coextensive with the (former) sovereign state, the traditional 'nation state'... It also suggests a need to reconsider some issues about democracy, or at any rate, about representative government... It is not only our theories of law, but also our theories of democracy, that are challenged by the new forms that are evolving among us in Europe (MacCormick, 135).

The possibility of localised deliberation opened in European nations and attempted in new forms such as electronic petitioning in Scotland is not, however, limited to Europe. In Canada, the industrialised world's most urbanized state, cities have long pressed for revision of the existing constitutional arrangement in which local authority is entirely delegated from provinces.¹¹ This demand is consistent with the OECD's call for development of governance mechanisms suited to what it identifies as Canada's various 'functional macroregions' consisting of urban centres, adjacent rural regions, and remote regions such as northern Ontario, and the territory of Nunavut with its special blend of common law and Inuit custom (OECD 2002, 3). The OECD observes that:

Although Canada has made significant progress towards implementing place-based policies... deficiencies in local governance remain the Achilles' heel of local and rural development. More sustainable solutions must evolve from the grassroots of local communities. Without changes in decision-making capacities at that level, it will prove difficult for economic development policies to transcend the federal/provincial jurisdictional issues and become more effective (OECD 2002, 5-6).

The OECD study's observations are consistent with a call from the Canadian central government for renewed attention to public-private partnerships for better governance. In its 1996 "Framework for Alternative Programme Delivery" the Treasury Board Secretariat advertised its willingness to encounter novel governance methods: "The interdependent nature of the Canadian federation and the drive for citizen satisfaction continue to be the hallmarks of the Government of Canada's approach to the creation of organisational forms such as agencies and collaborative arrangements outside the departmental model" (Fyfe and Fitzpatrick, 2002, 68). The Treasury Board further accepted that "collaborative partnerships are not only management tools, they are also instruments of governance; collaboration is the appropriate response to increasing

interdependence” (Fyfe and Fitzpatrick, 2002, 54). Viable examples of shared governance, even across borders, are rare but do exist. The Gulf of Maine Council, for example, consists of American and Canadian government agencies and non-governmental agencies, working together to find joint solutions to coastal management issues.¹²

4. Conclusion.

The elements of a solution are visible in this, and it remains only to assemble them. Inchoate objections to accountability and control require something like a national debate, and not just debate on the content of the issue, but the institutions used to encounter the issue. National debates, however, are difficult to conduct, no matter how significant their issues. The problem of scale crops up again, as does the accompanying problem of demonstration that a national debate can generate results which are both nationally and locally relevant. The question of consultation fatigue arises as well. Only certain issues are worth bringing to national consultation in democracies whose citizens have interests beyond government.

Attention to the possibilities of devolution and partnership provides the basis for a structural response to the problem of scale. While it may be desirable to maintain a national policy with respect to food biotechnology introductions, it may be possible to choose to devise institutions which can develop and implement variations from national policy on as-needed and as-warranted basis in particular functional macro-regions. ‘As-needed’ in this context can mean a need demonstrated by grass-roots action such as petitioning, or dissatisfaction or disengagement observed from central government. These amount to two dimensions of my response to the democratic accountability objection: first, accountability and control over certain issues is offered to functional macro-regions. Second, devolution of actual control is contingent on specific regions’ demonstration of their actual capacity to provide a workable governance plan chosen by citizens in that macro-region. Devolution of this kind is justified by the need to respect the capacity for self-determination, and something like the principle of subsidiarity operating in calls for devolution to serve both economic and democratic imperatives. It should be noted that this plan does not amount to a simple call for constitutional reform generating further levels of government. Rather, this approach amounts to nothing more than a variation on the existing Canadian constitutional practice of delegating authority to municipalities. The variation lies in the flexibility of the approach: on a regionally-chosen basis, specific issues are placed under the mandate of regionally devised institutions or partnerships, while central government retains

authority over issues unsuited to regional governance or simply lacking a viable regional solution.

However sensible the framework of this plan, it is still faced with a problem of scale, albeit reduced, and the question of the place of representatives in devolved governance schemes. The problem of scale is likely not itself amenable to technological solutions so long as we accept that the practice of democracy entails provision of mechanisms to allow minority opinions effective expression. A satisfying response to the problem of scale and its involvement in democratic accountability and control likely lies at the institutional level of institutional innovation, and there technological solutions may be more helpful. Precisely those methods of consensus building I criticised in the context of issue-resolution might be well-chosen as approaches to institution-building. Put roughly, while it may be offensive to self-determination to presuppose the possibility of consensus on resolution of substantive issues, it may be much less offensive to self-determination to hope for consensus on institutions suited to enabling useful debate and resolution of substantive issues. The new challenge seems to lie just as much with choosing democratic institutions that permit best use of the new technologies as it does with finding technologies to enable democracy.

Use of ICT-enhanced engagement mechanisms such as online information presentation and fora can be tremendously useful as a means of increasing access to the political process and providing nuanced engagement of fundamental public questions such as those about food biotechnology. The e-petition system in Scotland, mentioned above, is a superb example of a reform that brings a new dimension to political participation – petitions which can be dissented from, and a fresh version or reasons for dissent become part of the record of the petition. Mechanisms of this kind may be the best hope for novel institutions chosen through citizen engagement processes and review which provide a meaningful and direct way for citizens to engage in democracy – not a direct democracy of whims and prejudices, but a democracy of evolving institutions, perhaps evolving more rapidly than in the past, in step with emerging social challenges.

In a democracy of evolving institutions, representatives do not lack a role, but have a changed role, that of experts in institutional development. I have already mentioned the Gulf of Maine Council as an example of governance cooperation in a functional macro-region. It may be possible in the future to extend the mandate of this institution beyond transboundary harmonisation to a representative-run partnership whose precise contours and content are determined by citizens on both sides of the borders, using ICT-enhanced consultation websites, comparative modelling tools, and two-way communication tools to

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choose institutions and policies to develop an integrated coastal zone management program. Such a program might be the very best location for development of policies regarding GM salmon or GM potato as food biotechnology, whose risks and benefits are inextricable from considerations regarding the environment in which they are grown. The willingness of senior levels of the Canadian government to attempt novel partnerships such as the Gulf of Maine Council is testimony to the fact that existing methods of governance and consultation have shortcomings. The way is open, if we choose it, to careful experimentation with ways to redress the democratic accountability and control objection, and to give a full and fair hearing to the merits of food biotechnology.

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¹ By 'food biotechnology' I mean 'novel foods' as defined in: the [Food and Drug Regulations](#) - [Amendment (Schedule No. 948), as published in the "Canada Gazette Part II" - October 27, 1999]. "a) a substance, including a microorganism, that does not have a history of safe use as a food; b) a food that has been manufactured, prepared, preserved or packaged by a process that has not been previously applied to that food, and causes the food to undergo a major change; c) a food that is derived from a plant, animal or microorganism that has been genetically modified such that the plant, animal or microorganism exhibits characteristics that were not previously observed in that plant, animal or microorganism, the plant, animal or microorganism no longer exhibits characteristics that were previously observed in that plant, animal or microorganism, or one or more characteristics of the plant, animal or microorganism no longer fall within the anticipated range for that plant, animal or microorganism."

² See www.aquabounty.com.

³ Personal communication with Shirlyn Coleman, Manager of the Plant Propagation Centre, Department of Agriculture, Fisheries and Aquaculture, Government of New Brunswick, May 30, 2003. This is not to say that GM potatoes are universally rejected as as table food: consumers in China are positive regarding many GM foods. See Curtis et. al. (2002).

⁴ See, for example, David Suzuki, "Science Matters: Genetically Modified Foods Part II" November 3, 1999 syndicated in Canadian newspapers and reproduced on the David Suzuki Foundation website: "At a time when public concern over GM crops are mounting, it is foolish and dangerous to be watering down regulatory powers and reducing public confidence in food safety. The extensive use and consumption of GM crops has occurred with no public consultation, and what data does exist on the health effects of GM food has come from the biotech industry itself! It is unethical to conduct medical experiments without informed consent from the participants. Yet we now have more than 40 GM products in the Canadian food systems, without giving consumers a choice. We are part of a massive experiment and only after thousands of people have eaten GM food for years will we be able to tell if they are harmful. At the very least GM food should be labelled so we can choose whether to be part of the experiment or not."

⁵ There is of course a complex underlying debate which I cannot take up here, between the theory of liberal democracy on which democracy is justified as the best political system in light of its preservation of liberty, and the Kantian, Rawlsian, and communitarian views in which the principles of justice require democracy which in turn requires respect for liberty. There are complex differences between justifications of democracy for the sake of liberty, and justifications of liberty because its preservation serves the requirements of justice.

⁶ See, e.g., the Danish Board of Technology's exercises, <http://www.tekno.dk/subpage.php3?survey=16&language=uk>.

⁷ See James Fishkin's efforts at the Centre for Deliberative Polling, <http://cdd.stanford.edu/>.

⁸ For the sake of comprehensiveness I should mark as well relevant further questions regarding the process of mediation. There is widespread agreement amongst ICT-enhanced consultation advocates that mediation is a key part of successful online consultation, to limit excessive or repetitive contributions, to calm excessively boisterous discussion, and so on. There is a paternalistic element here as consultations typically employ facilitators who operate in a situationally-determined way and not in a rule-governed, appealable fashion typical of procedurally regular parliaments and associated bodies. Values such as the importance of continuing dialogue may mask fundamental oppositions, for example.

⁹ As the FAQ portion of the Scottish e-petitions facility explains, "The public petitions process is a key part of the Scottish Parliament's overall commitment to openness and accessibility. It allows individuals, community groups and organisations to participate fully in the democratic process, by raising issues of public concern with the Parliament and allowing members to consider the need for change. Any person or group may submit a petition to the Parliament. See: <http://www.scottish.parliament.uk/business/petitions/guidance/index.htm>.

¹⁰ I do not intend any particular specialised meaning of globalisation here: I intend only to refer to the increasingly global scope of markets, migration and communication – money, people, and ideas.

¹¹ From the European Parliament: "The general aim of the principle of subsidiarity is to guarantee a degree of independence for a lower authority in relation to a higher body or for a local authority in respect of a central authority. It therefore involves the sharing of powers between several levels of authority, a principle which forms the institutional basis for federal States."

¹² See www.gulfofmaine.org.