

1. Introduction

Not 'man' but 'men' inhabit the earth and form a world between them.¹

This book examines how adequately European Union (EU) law treats serious contestations about the development and use of the radically new technology of genetically modified organisms (GMOs). This examination takes place against a backdrop of particularly strong misgivings about the regulatory decisions on GMOs, as well as intense disagreement about their necessity and desirability, which have paralysed their use in agriculture and food in the EU. In conventional frames of regulation of new technologies, decisions about the research, development and deployment of radical technologies like GMOs were to be left entirely to the scientific experts. Within this conventional frame, scientific experts are considered as best placed to understand, anticipate and decide on regulatory issues related to technologies like these. This book starts with an assumption that an approach that thinks of scientific experts as the starting point in such regulation is inadequate, for reasons that are elaborated later in this chapter. The widespread scepticism about underlying policy-making and results among the citizenry poses a serious strain to classical modes of representation, and necessitates a serious engagement with those outside the regulatory table.² One of the prominent ways in which this engagement with public contestations and representational issues has transpired is through policy commitments to make EU regulation more amenable to public participation. This book examines how adequately EU law has treated public participation as a means to represent and mediate public contestations about the use and regulation of GMOs.

Discussions about regulation of technologies like GMOs are often dominated by an obvious prescription, as for instance by Fukuyama, for the state to find the potential mix of benefits and threats inherent to

¹ Hannah Arendt, *On Revolution* (Penguin 1963) 175. Emphasis added.

² WRR Scientific Council for Government Policy, *Uncertain Safety: Allocating Responsibilities for Safety* (Amsterdam University Press 2008) 88. The representational aspect is raised 'also because of the formulation of alternative plans to regulate controversial technologies by concerned citizens'.

biotech development.³ However, finding this middle ground is not a straightforward exercise since it is complicated by epistemic issues of knowability of both benefits and threats, regulatory capture by powerful interest groups or vocal agenda-setters, and the chasmic differences in cultural subjectivities and political normativities of groups who seek to shape regulation. Genetic modification in agriculture purports to increase yield, additive nutritive value or produce pesticide-like properties in crops through the technique of splicing – a process of deletion or insertion of identified genes for acquiring specific traits. Two decades of highly visible and controversial experience in EU regulation of genetically modified (GM) food and agriculture have provided important insights about conceptions of appropriate regulation of new technologies in general. GM crops have brought out fundamentally divided opinions about the appropriate development, use and regulation of the technology, throwing open profound philosophical and regulatory issues about modernity, rationality and progress. A plethora of literature in the past decade has focused on these differences through a variety of issues. They include the politics of production of seeds,⁴ simultaneous increase in control and rent-seeking behaviour by large transnational corporations,⁵ the domination of domestic regulatory structures by them, particularly in the Global South,⁶ and seed sovereignty of marginal farmers in impoverished countries.⁷ Other concerns have been raised during the regulation of GMOs, which are often considered technical, albeit with very significant political implications. They include concerns regarding the appropriate contours of employing the precautionary principle in controversial technologies;⁸ the appropriate ambit of science in regulation of harm to

³ Francis Fukuyama, *Our Posthuman Future* (Picador 2002) 10.

⁴ Ralph Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology, 1491–2000* (University of Wisconsin Press 2004).

⁵ Jeremy Rifkin, *The Biotech Century* (Putnam 1998).

⁶ Mae-Wan Ho, *Genetic Engineering or Nightmare? The Brave New World of Bad Science and Big Business* (Gateway Books 1998).

⁷ Sheila Jasanoff, 'Biotechnology and empire: The global power of seeds and science' (2006) 21 *Osiris* 273.

⁸ Helena Valve and Jussi Kauppila, 'Enacting closure in the environmental control of GMOs' (2008) 20 *Journal of Environmental Law* 339. See further, Jim Dratwa, 'Taking risks with the precautionary principle: Food (and the environment) for thought at the European Commission' (2002) 4 *Journal of Environmental Policy and Planning* 197.

health and environment;⁹ troubling doubts regarding toxicity, allergenicity and horizontal gene transfer as well as grave and irreversible effects on biodiversity from GMOs;¹⁰ the increasing dominance of risk regimes in the governance of techno-scientific innovation;¹¹ the need for recognizing consumer voices in appropriate development of new technologies;¹² the issue of appropriate ambit of science and precaution in World Trade Organization (WTO) mechanisms;¹³ and issues of culture and public opinion in regulatory regimes.¹⁴

Despite the visible domination of issues related to risk regulation in any brief survey of literature, it is pertinent to emphasize the breadth of the aforementioned issues.¹⁵ The scope includes conflicting worldviews about danger and safety, understandings of ethical and environmental appropriateness in technological development and evaluation of social necessities in appraisals of technology, as well as the importance of political values in engaging with science and technology. Examining how regulators seek to navigate governance of the desirability of techno-scientific advancements is

⁹ Bruno Latour, *The Politics of Nature: How to Bring the Sciences into Democracy* (Harvard University Press 2004).

¹⁰ Artemis Dona and Ioannis S. Arvanitoyannis, 'Health risks of genetically modified foods' (2009) 49 *Critical Reviews in Food Science and Nutrition* 164; Christoph Then and Christof Potthof, 'Risk reloaded: Risk analysis of genetically engineered plants within the EU – A report by Testbiotech e.V. Institute for Independent Impact Assessment in Biotechnology' <<http://www.testbiotech.org>> last accessed 7 September 2011. See further, Jane Rissler and Margaret Mellon, *The Ecological Risks of Engineered Crops* (MIT Press 1996); Marc Lappe and Britt Bailey, *Against the Grain: The Genetic Transformation of Global Agriculture* (Earthscan 1999).

¹¹ Donatella Alessandrini, 'GMOs and the crisis of objectivity: Nature, science and the challenge of uncertainty' (2010) 19 *Social and Legal Studies* 3.

¹² Michel Callon, 'The increasing involvement of concerned groups in R&D policies: What lessons for public powers' in Aldo Geuna, Ammon Salter and Edward Steinmueller (eds), *Science and Innovation* (Edward Elgar 2003).

¹³ Jacqueline Peel, *Science and Risk Regulation in International Law* (Cambridge University Press 2010).

¹⁴ Sheila Jasanoff and Brian Wynne, 'Science and decision-making' in Steve Rayner and Elizabeth L. Malone (eds), *Human Choice and Climate Change* (Battelle Press 1998).

¹⁵ See Maria Lee, *EU Regulation of GMOs: Law and Decision Making for a New Technology* (Edward Elgar 2008) 39–48. See for a general overview of the risk imperium, Gabe Mythen and Sandra Walklate, 'Introduction' in Gabe Mythen and Sandra Walklate (eds), *Thinking Beyond Risk Society* (Open University Press 2006) 3; Jane Franklin, 'Politics and risk', in Gabe Mythen and Sandra Walklate (eds), *Thinking Beyond Risk Society* (Open University Press 2006) 149.

related to the nature of the role that law plays in mediating and leading us through anxieties and hopes that accompany these conflicting world-views.¹⁶ When techno-scientific communities and relevant regulatory structures are unable to acceptably mediate these public concerns, such cases require bringing rationalities from other sections of society to the regulatory table.¹⁷ To make democratic decisions about which values should drive research, development and deployment of technology may, then, need further inputs rather than simply relying on scientific communities and the business establishments. It is in this context of recognizing the importance of democratic representation and values in making public decisions about technology, that the enlargement of arenas of regulatory deliberation is crucial. An important avenue for envisaging such enlargement of the arenas of deliberation has been through the commitment of public participation in EU policy documents. Whether such policy commitments are translated into justiciable legal principles and frameworks of public decision-making about GMOs needs further investigation.

The backdrop for this examination has significance over and above the straightforward concern of democratization of EU institutions and processes, by widening deliberative arenas of technology regulation through public participation. Linkages between law, technology and public contestations could have a crucial dimension in the shaping of democratic societies. A focus on contestations about technology, and regulatory choices between technology's various trajectories, is closely connected to the recognition that technological change is path dependent.¹⁸ This recognition refuses to buy into the myths of techno-scientific change as an unravelling of a pre-ordained track of optimal progress and universal scientific reason. Such an approach brings focus on the spectres of technological slippery slopes that might not be appropriate for an

¹⁶ Most commentators rightly rule out, at the outset, libertarian or laissez faire attitudes to technology development as misguided and unrealistic. That society should put constraints on the development of new technology to guide it in socially desirable ways is generally considered uncontroversial; see for a detailed exploration of this aspect: Janet A. Kourany, *Philosophy of Science after Feminism* (Oxford University Press 2010) chs 2 and 4.

¹⁷ See for instance, Dahl's definition of democracy in terms of granting public contestation, where rationalities emanating from groups other than dominant governing groups can inform these contestations. Robert A. Dahl, *Polyarchy: Participation and Opposition* (Yale University Press 1971) 4.

¹⁸ Path dependency assumes that technological development occurs along research tracks that are contingent to social and political choices, and are not naturally formed. See text to n. 60 for an elaboration.

ecologically sustainable economy, or might even be a debilitating tax on the possibilities of further democratization of our polities. Conceptually, notions of co-shaping of technology and society – that is, how social shaping of technology and technological shaping of society are interpenetrative – underline the need to focus on treating contestations about technological trajectories as central to concerns of democratizing polities.¹⁹ The centrality of attempting social shaping of technology in a democratic manner, and for democratic ends, becomes an important starting point for enquiries about the normative role of law in the regulation of technology. Further, the technological trajectories that society chooses can shape social futures in significant manners. By way of substantiation, first, Jacques Ellul famously emphasized the need to seek ways of resisting and transcending technological determinism for preserving the very possibilities of freedom in the human condition. In his technological age, ‘of autonomous, dominant totalizing systems of technology ... defined and dominated by it ... working as a principal law of our age’,²⁰ he underlined the need to transcend the rationalities of techno-logical systems to protect human freedom. In other words, while one might want to avoid Luddite panic of rejecting all new technologies, how do we avoid human enslavement to technological rationality? Literary worlds from Shelley²¹ to Atwood²² focus on the dystopian possibilities of new and radical technologies like biotechnology leading to both authoritarian control and catastrophe, even when developed with good intentions, or even with hopes or assertions of great progress.

Competing political, economic and ethical constructions that respond to these concerns have played an important part in the kind of disagreements encountered in the EU regulation on GMOs. For instance, even for

¹⁹ See Wiebe Bijker and John Law (eds), *Shaping Technology/Building Society: Studies in Sociotechnical Change* (MIT Press 1992), in particular ‘General introduction’, ‘Part I: Do technologies have trajectories?’ and Thomas J. Misa, ‘Controversy and closure in technological change: Constructing “steel”’, 111. See further, Langdon Winner, ‘Do artifacts have politics?’ in Langdon Winner (ed.), *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (University of Chicago Press 1986) 19.

²⁰ Jacques Ellul, *The Technological Society* (John Wilkinson tr, Knopf 1964); *The Technological Bluff* (Geoffrey W. Bromiley tr, Eerdmans 1990). His was not a call for rejection of technique, but transcending it, by emphasizing our freedom through recognizing our non-freedom. See in particular, Ellul, 1964, xxxii.

²¹ Mary Shelley, *Frankenstein; or, The Modern Prometheus* (Harding, Mavor and Jones 1818).

²² Margaret Atwood, *Oryx and Crake* (Bloomsbury 2003); Margaret Atwood, *Year of the Flood* (Bloomsbury 2009).

many scientists the impasse in green biotechnology is a site to learn lessons about the appropriate development of technology, by taking societal concerns and ethical, legal and social aspects on board.²³ Thus an interest in how law takes into account public contestations of technology impacts not just the democratization of regulation, but also the development of appropriate technology in the future. In other words, this book's preoccupation relates to the conversational space constituted by law to articulate anxieties about our collective transition through technological pathways, and the accompanying contestation and disagreements about the regulation of these technological choices.²⁴ At this stage, it is pertinent to elaborate on the palpable nature of public concerns and unease about GMOs in the EU.

1.1 DISQUIET ABOUT GMOS: PERCEPTIBLE, CONSIDERABLE AND PERSISTENT

The introduction of GMOs in the EU as a product in the internal market has encountered high levels of public unease, disagreement and resistance, which is recognized by the multilevel regime in inordinate ways. In 1997, when the Commission authorized a variety of GM maize (on the back of a single positive vote from a Member State), there were angry

²³ Rip cites a number of statements from nanotechnology researchers to this effect. Arie Rip, 'The tension between fiction and precaution in nanotechnology' in Elizabeth Fisher, Judith S. Jones and Rene von Schomberg (eds), *Implementing the Precautionary Principle: Perspectives and Prospects* (Edward Elgar 2006) 270, 272.

²⁴ Here, I follow Brownsword's differentiation of law and regulation as intersecting but not coextensive. Law can be seen as a subset of regulation, as regulators rely on a number of instruments including law to influence behaviour of the regulated. At the same time regulation, which 'signifies something like: "the sustained and focused attempt to alter the behaviour of others according to standards or goals with the intention of producing a broadly identified outcome or outcomes, which may involve mechanisms of standard-setting, information-gathering and behaviour-modification," ... does not encompass such tasks as constitution making and dispute resolution'. Roger Brownsword, *Rights, Regulation and the Technological Revolution* (Oxford University Press 2008) 6–7. It is within this understanding that I assume law can set standards for appropriate regulation of technology, like, say, through setting legal requirements for public participation in such regulation.

reactions from a number of Member States;²⁵ and even a resolution by the European Parliament against it.²⁶ This resistance is continuing in a contingent manner visible in various ways that are elaborated here. A number of surveys and opinion polls, conducted by non-partisan and EU bodies, point towards substantial public resistance in accepting expert recommendations about the necessity, utility and safety of the technology. For instance, the *GM Nation* process initiated by the UK Government reported that only 8 percent of the respondents were happy with eating GM foods.²⁷ Importantly, public unease does not appear to be decreasing with the passage of time, contrary to a popular imagery of an ignorant public who can be enlightened with effective public education on relevant scientific and technological matters (what is derisively called PR techniques by some civil society groups).²⁸ An increase in information and education on the designed advantages from the development

²⁵ See Tamara Harvey, 'Regulation of GM products in a multi-level system of governance: Science or citizens' (2001) 10 *Review of European Community and International Environmental Law* 321.

²⁶ European Parliament, 'Resolution on genetically modified maize' final edition 08/04/1997.

²⁷ See Department of Trade and Industry, *GM Nation? The Findings of the Public Debate* (UK Department of Trade and Industry 2003) para. 121, for more indicative details of the *GM Nation* process.

²⁸ European Commission, *Attitudes of European Citizens Towards Environment* (Special Barometer 2952008) 64: 58 per cent of the respondents were found to be opposed to the use of GMOs. Earlier, in a 2005 survey, it was noted that 'while support may have increased between 1999 and 2002, it then decreased between 2002 and 2005', in George Gaskell, Nick Allum, Sally Stares and Agnes Allansdottir, *Europeans and Biotechnology in 2005: Patterns and Trends – Final Report on Eurobarometer 64.3* (European Commission 2006) 21. See further: Luc Bodiguel and Michael Cardwell, 'Genetically modified organisms and the public: Participation, preferences and protest' in Luc Bodiguel and Michael Cardwell (eds), *The Regulation of GMOs: Comparative Approaches* (Oxford University Press 2010) 11, 22; European Commission, *European Science and Technology* (Eurobarometer 55.22001); *European Science and Technology* (2nd edn, Eurobarometer 58.0 2003). Further, 'GMOs have been rejected as undesirable by the majority of European publics in successive polls in the last decade', Gregory Shaffer and Mark Pollack, 'Regulating between national fears and global disciplines: Agricultural biotechnology in the EU' (Jean Monnet Working Paper No. 10 2004) <<http://centers.law.nyu.edu/jeanmonnet/papers/04/041001.pdf>> last accessed 11 November 2011.

of GM technology does not seem to generate an increase in its popularity.²⁹ By 2010, around 169 regions and 4713 local governments in the EU had declared themselves GM-free.³⁰

Public protest against the introduction of various GM crops has repeatedly taken the form of destruction of crops by protestors, notably in France, Belgium, the Netherlands and the United Kingdom. What is of interest here is not just the fact of destruction itself as an expression of public contestation, and accompanying issues of civil and political disobedience that pose a central problem to law's authority over citizens. What is of equal importance is the response of public juries in the UK to legal action against these destructions of property. These public juries have time and again acquitted such protestors. An example is the case of the prosecution of twenty-eight Greenpeace volunteers accused of crop destruction in GM fields, where the jury acquitted them of theft and failed to reach a verdict on criminal damage (19 April 2000). They were later acquitted regarding the latter charge (20 September 2000).³¹ Similar is the instance of acquittal of volunteers charged with causing public nuisance by boarding a merchant vessel *MV Etoile*, which the volunteers claimed was carrying illegal animal feed comprising a mixture of non-GM and GM material from the USA.³² Commentators have analysed this trend as an important indication of the public discomfort about criminalizing contestations, which most juries have generally considered as being in the public interest.³³

²⁹ This is clear in the report based on a series of polls commissioned by the Pew Initiative on Food and Biotechnology, a charitable trust established in 2001, with the aim of serving society as an honest broker in the debate on agricultural biotechnology, <http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Food_and_Biotechnology/PIFB_StakeholderForum_Process.pdf> last accessed 29 October 2011.

³⁰ GMO-free Europe, *GMO-Free Regions and Areas in Europe* (2009) <http://www.gmofreeregions.org/fileadmin/files/gmofreeregions/full_list/List_GMOfree_regions_Europe_update_September_2010.pdf> last accessed 1 December 2011.

³¹ See also *R. v Colchester* [2001] *Criminal Law Review* 564 as indicative of this trend of acquittals in the jury system, where it was the accused that were arguing for the possibility of greater damage, so as to secure the right to elect for jury trial; cited in Bodiguel and Cardwell (n. 28) fn 102.

³² British Broadcasting Corporation, *GM Protestors Cleared of Charges*, 16 September 2005; cf., Bodiguel and Cardwell (n. 28) fn 101.

³³ 'With juries being the representative of the *public*, this marks a perhaps unexpected engagement of wider society in the governance of GMOs', Bodiguel

Public concern is explicitly recognized in the recitals of the Aarhus Convention,³⁴ and recognition of public unease is crisply articulated by various legislatures in Europe, including the European Parliament.³⁵ The de-facto moratorium of the late 1990s that led to the breakdown of the previous EU regulatory regime was itself a product of the recognition by some national governments that public opinion in their territories expected them to oppose the inevitability of EU authorization of GMOs.³⁶ Under the current regime, Germany became in mid-2009 the sixth country to ban a particular strain of GM maize, despite prior clearance by EU institutions for crop cultivation all over Europe. Before this, Austria, Hungary, Poland, France and Greece had put in place safeguard bans on specific GMOs that had earlier been cleared by the requisite EU procedure.³⁷ These Member State actions hint at the possibility that the public concerns articulated in the de-facto moratorium

and Cardwell (n. 28) 26. See for a detailed comparison with the relevant French process, 26–35.

³⁴ UNECE Convention on access to information, public participation in decision-making and access to justice in environmental matters, 1998 <<http://www.unece.org/fileadmin/DAM/env/pp/documents/cep43e.pdf>> last accessed 1 December 2011: ‘Recognizing the concern of the public about the deliberate release of genetically modified organisms into the environment’, Preamble of Aarhus Convention.

³⁵ European Parliament (n. 26).

³⁶ Two declarations were made in this regard in 2194 Council Meeting – 24/25 June 1999. *Declaration by the Danish, Greek, French, Italian and Luxembourg delegations concerning the suspension of new GMO authorisation; Declaration by the Austrian, Belgian, Finnish, German, Netherlands, Spanish and Swedish delegations*. There are various triggers identified for the moratorium; the most important include the strong and systematic picketing of supermarket outlets that sought to sell a new GM chocolate-bar brand in September 1998 that elicited ‘no GM’ policies from most European retail chains (that they would sell products only if there was a clear message from consumers that they really wanted these foods) and similar policies from large food manufacturers; the publication of a research report in *Nature* in May 1999, suggesting threat to biodiversity in data that pointed to adverse toxic effects of GM pollen to the larvae of the Monarch butterfly; as well as the media coverage and public reaction related to the immediate suspension and sacking of Arpad Pusztai, a scientist in the Rowett Research Institute in Aberdeen, UK, for issuing a press release regarding laboratory feed studies with rats that purportedly demonstrated increased toxicity in GM potatoes.

³⁷ European Commission, ‘Communication from the Commission to the European Parliament, the Council, the economic and social committee and the Committee of the regions on the freedom for Member States to decide on the cultivation of genetically modified crops’ COM (2010) 375 final, fn 4.

continue in the current framework.³⁸ The Council had rejected Commission proposals to repeal some of these bans by a qualified majority on four different occasions.³⁹

Even the most trenchant critics of these bans within the EU, who characterize them as ill advised for a variety of reasons (including playing to populism, public ignorance and irrationality), have not ascribed mercantilism as a possible intent of these moves.⁴⁰ Significantly, there has been no such accusation of protectionism by Member States, including those who had originally voted for the release of the specific GMO. Some of the Member States which had originally voted for the release of individual GMOs have strongly resisted Commission proposals to revoke subsequent bans of other Member States. This is well illustrated by the EU voting on the Austrian withdrawal of a particular strand of GM maize,⁴¹ where the EU President stated that most Member States had a second reasoning against the Commission's proposal, viz., 'the feeling that a Member State's will should be respected'.⁴² Thus, though the reasons cited for safeguards included new scientific evidence of risk, or invoked inadequacies of risk appraisal to public concerns, the factum

³⁸ '[I]t might be highlighted that lack of confidence in the regulatory framework extends well beyond the anti-GM movement, even to governments'; Bodiguel and Cardwell (n. 28) 36.

³⁹ Commission Communication (n. 37) fn 6.

⁴⁰ Indeed, allegations of trade protectionism from the other side of the Atlantic are commonplace, which is signified in the facts of the *EC-Biotech* dispute in the WTO. See text with n. 567 for a discussion.

⁴¹ Commission proposals for withdrawal of Austrian safeguard derogations were rejected twice by qualified majorities in the Environment Council, 2773rd Environmental Council Meeting, 18 December 2006, rejecting 'European Commission, Proposal for a Council Decision concerning the provisional prohibition of the use and sale in Austria of genetically modified maize', COM (2006) 510 final. In the vote on the second proposal the majority pointed out the failure to reassess the concerned GMOs under the Directive, and argued that 'the different agricultural structures and regional ecological characteristics in the EU need to be taken into account in a more systematic manner in the environmental risk assessment of GMOs'. The Commission's third proposal on the specific derogation only targeted the food and feed aspects of the safeguard action. However, even this proposal could not muster a support/rejection through qualified majority. This has left the Commission with the discretion to adopt its proposal – 2826 Environmental Council meeting, 14 November 2007.

⁴² <<http://www.euractiv.com/en/biotech/eu-considers-pause-thought-gmos/article-168053>> last accessed 13 June 2011.

of public opinion and political pressure to resist releases in specific Member States is intertwined with these invocations.⁴³

Further, there appears to be a transition from the days of the biotech halcyon, when GMOs were hailed as a triumph of modern science, to a distinct recognition among decision-makers that public opinion and consumer voice are perhaps the most important aspect in the success of a technology like GM foods. Connected to consumer scepticism is the issue of a perceived lack of benefits for the general public; surveys show substantial sections of the public perceive the use of technology as mainly benefiting producers as opposed to ordinary people.⁴⁴ Literature surveys point out various points of convergence in the institutional pursuit of conversations with consumer voices. These include the finding that attitudes towards GM foods appear to be resistant to persuasion, 'including different arguments as absence of risks, improved risk assessment methods, introduction of traceability systems, public participation in risk management, and a whole range of producer and consumer related benefit; all to no avail'.⁴⁵

The attempt to educate the public to allay their scepticism about specific technologies is based on a deficit model, which seeks to inform the ignorant lay person about the technical aspects and evaluation of risk. This model is founded on an assumption that lay people lack the cognitive ability to understand and appreciate issues of safety, and the basis of the public's irrational perception of risk – that is, the difference between a lay perception and an expert finding – is this information deficit. Within the deficit model, then, the problem of lay ignorance can be solved through effective communication of risk findings.⁴⁶ Deferring a

⁴³ Commission Communication (n. 37) 6. Here the Commission remarked, in a matter of fact manner, that the Member State safeguard bans, though invoked as new scientific risks, in reality, involve diverse and varied types of reasons, including political or economic motivations such as meeting the demand for GM-free markets.

⁴⁴ *GM Nation* (n. 27) para. 121. Earlier, the UK Food Safety Authority survey in 2000 found that the presence of GM ingredients was a key criterion for consumers in their decision to avoid purchase from takeaways: House of Lords Select Committee, 2000, fns 4–5, cited in Michael Cardwell, 'The release of genetically modified organisms into the environment: Public concerns and regulatory responses' (2002) 4 *Environmental Law Review* 156.

⁴⁵ Joachim Scholderer, 'The GM foods debate in Europe: History, regulatory solutions, and consumer response research' (2005) 5 *Journal of Public Affairs* 263, 270.

⁴⁶ Susan Owens, 'Engaging the public: Information and deliberation in environmental policy' (2000) 32 *Environment and Planning* 1141, 1142.

discussion on the deficit model of risk to the third chapter, here I only point to a major criticism regarding the assumption that responses and judgements about dangers are purely a mechanical processing of information. Instead, this cognitive view of a human being is criticized as too much of a simplification. It has been asserted that people forge questions and find answers about issues that concern them, rather than purely perceive and process the information that is provided to them.⁴⁷ Various scholars have underlined the importance of 'affect heuristics' when people make judgements.⁴⁸ Slovic noted: 'Although risk perception was originally viewed as a form of deliberative, analytic information processing, over time we have come to recognize how highly dependent it is upon intuitive and experiential thinking, guided by emotional and affective processes'.⁴⁹ It appears that there is a gradual recognition that public beliefs and consumer evaluations are highly complex, and cannot be merely encapsulated by ascriptions of safety and risk, though safety heuristics are often used to ascribe rationality to visible public unease. Issues of general socio-political attitudes (including those towards the environment and nature), increase of corporate control over science, technocratic regulation and the resultant lack of social trust were all found to be connected to public articulations of safety and risk in agricultural biotechnology.⁵⁰ This state of public opinion is understood to arise partly from the large-scale appearance of issues related to food safety and bioethics in public agendas, including through considerable efforts of green and consumer groups. The Bovine Spongiform Encephalopathy (BSE) crisis and media coverage of how regulators handled it, as also the anxieties from the sudden appearance of Dolly the cloned sheep, could only have reinforced this public scepticism.

For reasons mentioned in this section, it is clear that public unease about GMOs is clear and considerable, and the contestations about opting for this technological trajectory perceptible. Further, persistent opposition is despite regulatory attempts at science communication and consumer education, attempts that are based on a flawed understanding that disagreement solely reflects the ignorance of the public. The continuation

⁴⁷ Serge Moscovici, 'The phenomenon of social representations' in Robert Farr and Serge Moscovici (eds), *Social Representations* (Cambridge University Press 1984) 3.

⁴⁸ See for an elaboration: Helene Joffe, 'Risk: From perception to social representation' (2003) 42 *British Journal of Social Psychology* 55, 58.

⁴⁹ Paul Slovic (ed.), *Risk Perception* (Earthscan 2000) xxxi.

⁵⁰ Michael Siegrist, 'The influence of trust and perceptions of risk and benefits on the acceptance of gene technology' (2000) 20 *Risk Analysis* 195.

and accentuation of public contestations to the use of GMOs highlight the inadequacies with representation in the regulation of radical technologies. This is since democratic law ought to frame principles to reliably ensure that policies are responsive to citizens' preferences, albeit within the legitimate ambit of constitutional values. The normative and consequentialist reasons for being responsive to citizens' preferences, including through public participation, are elaborated in the next section.

1.2 BENEFITS FROM PUBLIC ENGAGEMENT WITH CONTESTATIONS ABOUT TECHNOLOGY

Should law require regulation of new technologies to be as proximate and responsive to citizens' preferences as possible is an important question that needs consideration. A serious engagement with public contestations about technologies, and their trajectories, is beneficial for the democratization of both technology and law. To start with many prominent sociologists would insist that the design of any technology, as it is finally deployed in the market, cannot be understood without the political, professional and economic factors that have shaped it at the drawing board; 'technologies are born out of conflict, difference or resistance'.⁵¹ Resistance to particular kinds/trajectories of technology is identified as having an important signalling function in the development of technology:

Rather than asking what causes people's reactions to new technology, we ask how their reactions influence the development of new technology. Resistance is an independent variable of the design rather than a dependent one ... resistance is not about changing or not changing, but about the direction and the rate of change ... resistance is more a problem of the designer than of the user. But in avoiding the trap of shifting the attribution from user to designer, one needs to see the systemic process between designers and users over time... where designers are not the only actors, there is capital involved ... shareholders, buyers and sales-people, all following a different logic. Highlighting the contributions of resistance to that 'game' empirically in different contexts serves to enhance the user perspective.⁵²

⁵¹ Bijker and Law (n. 19) 9.

⁵² Martin Bauer, 'Technophobia: A misleading conception of resistance to new technology' in Martin Bauer (ed.), *Resistance to Technology* (Cambridge University Press 1995) 97.

User perspectives and the way technology is developed can have various ramifications beyond the perspectives of an individual consumer, as larger questions of governance and citizenship are intricately connected to such signalling during development of technology.

There is a pejorative trend of ascribing contestations and resistance to particular technologies, like GMOs, as technophobic and irrational. In contrast, the EU Expert Group on Science and Governance points out the possibilities of existence of alternate rationalities of public unease hidden from dominant scientific paradigms:

[P]erhaps the most widely recognized indicator of public unease concerns reactions to issues at the intersection of ‘science’ (including science-based technologies) and ‘risk’. The public is thought to fear science because scientific innovations entail risk. Both science and risk, however, are ambiguous objects. It is frequently assumed in policy circles that the meanings of both for citizens must be the same as for experts, but that assumption is, in our view, itself a key element in generating ‘public unease’. The widespread sense of unease – sometimes expressed as ‘mistrust of’ or ‘alienation from’ science – must be seen in broader perspective. We conclude indeed that there is no general, indiscriminate public disaffection with or fear of ‘science’. Instead, there is selective disaffection in particular fields of science, amidst wider areas of acceptance – even enthusiasm.⁵³

Further, it could be that:

[a]lthough the European public has often been characterized as technophobic, emotional or susceptible to NGO and media propaganda over GMOs, there is nothing irrational about disagreeing with a scientific estimate of risk. People may not know the technical details, but they have developed awareness of the broad issues involved and ways of forming their own judgments. Their previous experience, such as the BSE crisis, found concerns regarding the (un)reliability of scientific reassurances of safety and the authorities’ tendency to conceal information when powerful economic interests are at stake.⁵⁴

At one level, the significance for regulators to take into account overt contestations about technologies like GMOs could be to ensure the most

⁵³ Expert Group on Science and Governance, *Taking European Knowledge Society Seriously: Report of the Expert Group on Science and Governance to the European Commission* (EUR 22700 2007) 9 <http://ec.europa.eu/research/scienc society/document_library/pdf_06/europeanknowledge-society_en.pdf> last accessed 21 December 2011.

⁵⁴ Elsa Tsioumani, ‘Genetically modified organisms in the EU: Public attitudes and regulatory developments’ (2004) 3 *Review of European Community and International Environmental Law* 279, 281.

responsible designs of technologies are developed and adopted in society. Further, there could be reasons related to pursuing democratic ideals that necessitate regulators to take into account such voices. Important scholarship on scientific citizenship and governance of new technologies conceptually connects general concerns about disagreements regarding law and justice to contestations about technological trajectories. In this stream, science, politics and law are seen to be closely entangled, and regulation of science and technology has been identified as a major challenge for democratic governance, 'since political decisions about science and technology inevitably entail questions of democracy'.⁵⁵ First, the way certain technologies are developed or deployed may lead to more authoritarian states or can dramatically concentrate wealth and power among smaller sections of a society. For instance, the physical arrangements that modern technology effectuated through industrial production, war and communication have fundamentally changed exercise of power and experience of citizenship.⁵⁶

Secondly, the way in which law and regulation structures/makes decisions about specific technologies can have general effects on the polity in a manner that is over and above how such technologies change society. How regulators treat contestations about technology, especially in cases of fundamental disagreements and persistent contestations, can have important effects on the law's aspiration to be democratic. Engaging with public unease about specific technologies could possibly be approached by some regulators to merely engineer legitimacy, where the expression of public unease becomes only a practical hurdle that needs to be overcome. However, such an approach to regulation of technology belies law's general claim to be genuinely democratic. Beyond proceduralities of decision-making, democratic normativity requires law to have a serious engagement with the inescapability of disagreement about even fundamental matters of law, and not a caustic acknowledgement about

⁵⁵ See for instance: Alfons Bora, 'Techno-scientific normativity and the "iron cage" of law' (2010) 35 *Science, Technology and Human Values* 3. He examines a plethora of literature to make this observation including Yaron Ezrahi, *Descent of Icarus: Science and the Transformation of Contemporary Society* (Harvard University Press 1990); Steve Fuller, *The Governance of Science: Ideology and the Future of the Open Society* (Open University Press 2000); Daniel Lee Kleinman (ed.), *Science, Technology and Democracy* (State University of New York Press 2000); Philip Kitcher, *Science, Truth and Democracy* (Oxford University Press 2001); and Sheila Jasanoff, *Science at Bar: Law, Science and Technology in America* (Harvard University Press 1995).

⁵⁶ Winner (n. 19) 20.

disagreement in views about religion, ethics and philosophy.⁵⁷ Waldron points out that ‘our common basis for action in matters of justice has to be forged in the heat of our disagreements, not predicated on the assumption of a cool consensus that exists only as an ideal’.⁵⁸ He distinguishes this from a general assumption and argues that such an inaccurate common view cannot obliterate the fact of disagreement.⁵⁹ Given the fact that widespread contestations about regulation of GMOs have persisted for decades in the EU, perhaps based on vantage-points that are different from dominant regulatory and scientific communities, it becomes important for regulators to treat these disagreements seriously so as to make a claim for democratic normativity. It would be difficult to deny the reasonableness of a normative expectation on law to take disagreements seriously, especially in situations where substantial sections of citizens (perhaps even a majority) consistently appear to disagree with the release of GMOs. Hence it would be reasonable to start from a position that, once there is an assumption of considerable and persistent disagreement, the representational question in regulatory deliberation needs to be taken more seriously, including through ensuring effective participation of publics which are wider than expert communities. It could be missing a trick to ignore public unease with a hope that the public will turn around, or by explaining unease away as ascriptions of irrationality of publics, or even as mere products of agenda-setting by civil society organizations.

A serious engagement with societal disagreement about technologies is also directly relevant to the development of democratic technology. The assumption here is to move away from an understanding of technological change as a race along a single pre-ordained track following a single self-evidently optimal line of progress, to one where technological

⁵⁷ Jeremy Waldron, *The Dignity of Legislation* (Cambridge University Press 1999) 154–155.

⁵⁸ During a sympathetic account of political process in Western liberal democracies, Waldron recounted that ‘every single step that has been taken by legislatures towards making society safer, more civilized, and more just has been taken against a background of disagreement, but taken nevertheless in a way that managed to somehow retain the loyalty and compliance (albeit often grudging ...) of those who in good faith opposed the measures in question ... including prohibition of child labor, limitation of working hours, dismantling of segregation, health and safety regulation in factories, liberation of women’, as opposed to a well-ordered Rawlsian justice consensus. He emphasized that these political achievements had authority and respect as law, despite disagreements even as to whether it is a step in the right direction, *ibid* 156.

⁵⁹ *Ibid*.

development is more like biological evolution. Development of technologies is better understood as an 'open branching process more akin to organic growth', and interacting with 'wider social structures and contextual contingencies to become channelled in highly path-dependent ways'.⁶⁰ Recognition of path dependency, and a refusal to buy into the myths of technological change as an unravelling of a pre-ordained track of optimal progress, make a focus on law's engagement with disagreement an important way to identify and deal with spectres of technological lock-in. Or, as Charles Taylor would suggest, 'we are not indeed locked in. But there is a slope, an incline in things that is all too easy to slide down'.⁶¹ Once we recognize that the development of technologies and their trajectories is not linear and natural, but is contingent on social factors, the influence of user resistance in social shaping of technology is

⁶⁰ See for a succinct introduction to this position: Andy Stirling, 'Science, precaution and the politics of technological risk: Converging implications in evolutionary and social scientific perspectives' (2008) 1128 *Annals of the New York Academy of Sciences* 95, 97. He continues: 'In a complex, dynamic, interconnected, and finite world, only a small subset of the totality of potentially viable developmental pathways will actually be followed. This can be as true at the level of the design of an individual consumer product, like the video or DVD, as at the global scale taken in the configuration of major infrastructures, like those underlying energy, transport, communication, and industrial production systems'. Questions of path dependency are often dealt away for various reasons, mainly, I suspect, due to the dilemma of regulatory connection, where we know very little about the technology at the initial stages of its development, and at a later stage, when we get to know about, it is too late to stop it; see Paul Sollie, 'Ethics, technology development and uncertainty: An outline for any future ethics of technology' (2007) 5 *Journal of Information, Communication and Ethics in Society* 293, 297.

Falsities and inadequacies of the assumption behind a single and self-evident optimal line of progress unravelling technological developments are often ignored through various heuristic mechanisms including: avoidance – for instance, Calestous Juma, 'The new culture of innovation: Africa in the age of technological opportunities', Keynote Address (8th Summit of the African Union, Addis Ababa, 29 January 2007); wishing it away – for instance, Mireille Hildebrandt, 'A vision of ambient law' in Roger Brownsword and Karen Yeung (eds), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes* (Hart Publishing 2008) 175, 176; as also general assertions that it is indeed such unravelling of the universal scientific rationale that unfolds through technological development – for instance, Paul Ceruzzi, 'Moore's Law and technological determinism: Reflections on the history of technology' (2005) 46 *Technology and Culture* 584, 593.

⁶¹ Quoted in Richard Spinello, *Cyberethics: Morality and Law in Cyberspace* (3rd edn, Jones and Bartlett 2006) 9.

evident.⁶² Such social shaping includes mediation of the nature and effects of slippery slopes that have to be identified early enough to avoid situations of a *fait accompli*. For instance, fear of irreversibility is visible in the claims of some public groups that large scale cultivation of GM crops leads to lock-in of agriculture to GM crops due to what they see as unmanageable mixing of genetic material between GM and other kinds of agriculture. They quote the experience of widespread cultivation of soya in Argentina or canola in Canada for the slim possibilities of returning to an organic or GM-free form of cultivation, once widespread transgenic cultivation is allowed.⁶³ These pictures of irreversibility and lock-ins are differently mediated by different regulatory communities, where the representation and participation of farming and other public groups are important. Whether law specifies scope for participation of these groups, which are traditionally outside the pale of regulatory deliberation, impacts the evaluation and management of ecological slippery slopes.

1.3 DEMOCRATIC DEFICIT IN POSTNATIONAL FRAMEWORKS

The general issues that make the legal engagement with public contestations about GMOs important appear to be accentuated in postnational frameworks like the EU.⁶⁴ Concerns of democratic deficits in the EU

⁶² Compelling evidences of how social change and technological change shape each other (co-construction of technology and society) are considered by many philosophers of technology. See Wiebe Bijker, *Of Bicycles, Bakelite and Bulbs: Toward a Theory of Sociotechnical Change* (MIT Press 1995); Wiebe Bijker and John Law, 'Do technologies have trajectories?' in Bijker and Law (n. 19) 15; Thomas J. Misa, 'Controversy and closure in technological change: Constructing "steel"' in Bijker and Law (n. 19) 109.

⁶³ Gundula Meziani and Hugh Warwick, *Seeds of Doubt* (Soil Association 2002). See further, Kahon Chan, "War of the papayas", Do technologies have trajectories?' *China Daily* (Hong Kong, 8 September 2011) <http://www.chinadaily.com.cn/hkedition/201109/08/content_13645581.htm> last accessed 21 September 2011.

⁶⁴ The term 'postnational' is used interchangeably with 'supra-national' here, and means legal spaces that have emerged as a result of the decline of the dichotomy between national and international law, triggered by increasing inter-linkages in structures of national/regional and global governance. See further: Nico Krisch, *Beyond Constitutionalism: The Pluralist Structure of Post-national Law* (Oxford University Press 2010).

institutional architecture are persistently raised without resolution, notwithstanding robust defences of the EU regulatory regimes by renowned political scientists like Majone and Moravcsik.⁶⁵ These concerns include issues such as how direct an influence are EU citizens' policy preferences on EU policy outcomes, or, in other words, how technocratic or political is the policy process.⁶⁶ Here, an important query concerns the existence of opportunities in the institutional design that allow for an opposition to the current leadership elites and policy status quos, an essential feature in liberal democracies.⁶⁷ There have been various institutional attempts to address the important question of the democratic deficit, including recent attempts at reform of delegation and implementation powers of the Commission.⁶⁸ Whether these attempts can resolve such concerns is yet to be seen.⁶⁹ Nevertheless, an architecture that allows the release of GM seeds despite a majority of Member States repeatedly voting against it in the committee procedure,⁷⁰ as well as substantial contestation and unease among the general population,⁷¹ accentuates already existing concerns of

⁶⁵ Francesca Bignami, 'The democratic deficit in the European Community rulemaking: A call for notice and comment in comitology' (1999) 40 *Harvard International Law Journal* 451. See for Majone's regulatory state thesis: Giandomenico Majone (ed.), *Regulating Europe* (Routledge 1996) and Giandomenico Majone, 'Europe's democratic deficit' (1998) 4 *European Law Journal* 5. See for Moravcsik's inter-governmentality thesis: Andrew Moravcsik, 'Despotism in Brussels? Misreading the European Union' [2001] *Foreign Affairs* 114.

⁶⁶ See Andreas Follesdal and Simon Hix, 'Why there is a democratic deficit in the EU: A response to Majone and Moravcsik' (2006) 44 *Journal for Common Market Studies* 533, 534.

⁶⁷ *Ibid* 548.

⁶⁸ See the co-decision procedure by Council and the European Parliament for legislative acts under Article 289 of the Treaty on the Functioning of the European Union (TFEU), procedures for delegated acts (Article 290 TFEU) and procedures for implementing acts (Article 291 TFEU). Further, see Regulation 182/2011 of the European Parliament and of the Council laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's exercise of implementing powers [2011] OJ L55/13.

⁶⁹ Vihar Georgiev, 'Commission on the loose? Delegated lawmaking and comitology after Lisbon' (EUSA Twelfth Biennial International Conference, Boston, March 2011); Andreas Follesdal, 'The legitimacy challenges for new modes of governance: Trustworthy responsiveness' (2011) 46 *Government and Opposition* 81; Christopher Lord, 'Still in democratic deficit' (2008) 43 *Inter-economics: Review of European Economic Policy* 316.

⁷⁰ Text near n. 162.

⁷¹ Text near nn. 25–45.

democratic deficit. Public participation has been offered as an institutional route to address this concern of representational and democratic deficit (as discussed later in this chapter, as well as in the second chapter). By focusing on the room for public participation in EU regulation of GMOs, this book seeks to examine how adequately EU law treats serious disagreements about the development and use of radical technologies like GMOs.

1.4 CHARACTER OF SCIENTIFIC ADVICE IN THE REGULATION OF TECHNOLOGY

Issues of public participation, representation and democratization in the regulation of technologies like GMOs are intricately connected to how law involves scientific advice. Since scientific advice plays an important part in the regulation of technology, especially in risk regulation, it requires us to bracket an appropriate understanding of the contemporary scientific enterprise. The broad sociological literature that has characterized contemporary scientific enterprise as *Mode-2*, *post-normal* or *post-academic*, as opposed to normal or traditional science, is of importance here.⁷² These enumerated approaches understand science as beyond its traditional understanding, of say, Kuhn.⁷³

Kuhn famously characterized scientific enterprise (*normal science*) as a process regarding debates about the rules of science, ‘research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice’.⁷⁴ He saw scientific revolutions as ‘tradition shattering complements to the tradition-bound activity of normal science’, which predicates that even scientific change is bound by the internal heuristics of a discipline.⁷⁵ As opposed to this *normal* condition, contemporary scientific research and expertise is marked by a number of factors mentioned below, which have implications for the use of scientific expert advice in the regulation of technology. Where ‘facts

⁷² Though there are internal differences among these approaches that characterize science, all of them have similar effects for the limited purpose here – which is related to employment of scientific expertise in regulation, enumerated in the subsequent paragraphs.

⁷³ Thomas Kuhn, *The Structure of Scientific Revolutions* (University of Chicago Press 1962).

⁷⁴ *Ibid* 10.

⁷⁵ *Ibid* 6.

are uncertain, values in dispute, stakes high and decisions urgent' the conventional model of the linear communication of the findings of scientific enquiry to policy-makers may be insufficient.⁷⁶

[N]ormal science aims at establishing the ultimate truth or the final resolution of a scientific puzzle, post-normal science recognizes that as long as both scientific uncertainties and decision-stakes are high, such aim is in principle unachievable. Indeed it can be misleading and create false expectations to act as if the role of science in such issues is just to get the facts right. Instead post-normal science aims at common commitments to reflective approaches for dealing with complex policy issues.⁷⁷

Various sociologists of science have asserted the differences between the nature of the contemporary scientific endeavour and the earlier ideal-type of science. The classical ideal-type uses experimental systems that consist of only one epistemic object (or unknown element), while the former research is faced with a multi-sited heuristic endeavour having multiple epistemic objects. This makes contemporary scientific research, which informs regulation, a multi- or interdisciplinary confrontation. This negates general expectations of objective standards and absolute truths during risk regulation. Another difference identified by these scholars is that while in the first case (*normal science*) the disciplines are primarily scientifically framed, in the second case the individual scientific fields also fulfil a societal function and follow explicit trans-scientific objectives, often leading these multiple trans-scientific objectives to be in conflict with each other.⁷⁸ Here, then, the nature of advice that emanates from scientific enterprises depends on the character of the trans-scientific objective.

Parallel is the characterization of contemporary science as Mode-2, which notes the replacement of traditional university-oriented forms of

⁷⁶ Jerome Ravetz, 'Usable knowledge, usable ignorance: Incomplete science with policy implications' in William C. Clark and Robert Munn (eds), *Sustainable Development of the Biosphere* (Cambridge University Press 1986) 415, 422. See further Silvio Funtowicz and Jerome Ravetz, 'Science for the post-normal age' (1993) 25 *Futures* 735.

⁷⁷ Arthur Petersen, Albert Cath, Maria Hage, Eva Kunseler and Jeroen van der Sluijs, 'Post-normal Science in practice at the Netherlands Environmental Assessment Agency' (2011) 36 *Science, Technology and Human Values* 362, 367.

⁷⁸ Silvio Funtowicz and Jerome Ravetz, 'Post-normal science: An insight now maturing' (1999) 31 *Futures* 641.

mono- or interdisciplinarity by *trans-disciplinary* science that ‘is embedded in non-hierarchical, heterogeneous, transient settings’.⁷⁹ The blurring of scientific disciplines is seen to be accompanied by a commonplace mixing of what is traditionally understood as separate enterprises of scientific, technological and industrial research, both outside and inside universities.⁸⁰ In this scenario, which is also termed ‘post-academic’, the characteristics of disinterestedness and objectivity of the scientific enterprise cannot be taken for granted any more.⁸¹ The large-scale industrialization of science for industrial, economic and social application, and the accompanying involvement of concerns of profit in corporate investment, are seen to affect research agendas of the scientific enterprise. The Dutch scientific council for government policy (WRR) refers to the fading distinctions between doing science and doing business as implicating the position of expert advice in regulation.⁸² These characterizations of contemporary scientific expertise, and of its use in regulation, are widely recognized as valid by sociologists of science.⁸³ Therefore, for an adequate understanding of scientific advice in regulation to deal with the representational problem, one may additionally need the consideration of public values; an aspect that is elaborated in Chapters 3 and 6. Here public participation is often claimed as an important avenue for such ascertainment of appropriate values in regulation by EU bodies.

⁷⁹ Helga Nowotny, Peter Scott and Michael Gibbons, *Rethinking Science: Knowledge and the Public in an Age of Uncertainty* (Polity Press 2001); Michael Gibbons, *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies* (Sage 1994).

⁸⁰ Robert Hagendijk, ‘The public understanding of science and public participation in regulated worlds’ (2004) 42 *Minerva* 41.

⁸¹ John Ziman, ‘Is science losing its objectivity?’ (1996) 382 *Nature* 751; John Ziman, *Real Science: What It Is, and What It Means* (Cambridge University Press 2000).

⁸² WRR (n. 2) 85–87.

⁸³ See a broad review of literature regarding post-normal science as focus of critique in John Turnpenney, Mavis Jones and Irene Lorenzoni, ‘Where now for post-normal science? A critical review of its development, definitions, and uses’ (2011) 36 *Science, Technology and Human Values* 287, 295. See further, Sheila Jasanoff, ‘Breaking the waves in Science Studies: Comment on H.M. Collins and Robert Evans, The Third Wave of Science Studies’ (2003) 33 *Social Studies of Science* 389.

1.5 EU INVOCATION OF PUBLIC PARTICIPATION

Arguments in favour of public participation include the cognitive improvement of decisions due to inputs from a plurality of perspectives, including widening its technical and scientific base.⁸⁴ Further, they also include an implied emphasis on participation as furthering justice and equity,⁸⁵ ambitions to make participative or deliberative measures supplements or alternatives to representative democracy,⁸⁶ enhancement of legitimacy of controversial environmental decisions that are frequently delegated to unelected experts,⁸⁷ and normative advantages for representative democracies through improvements in transparency, accountability and implementation, resulting in a wider range of democratic deliberation.⁸⁸ While acknowledging possible contradictions between these multiplicities of aspirations, the reason for employing public participation as a marker in this book is discussed in this section.

The acceptance of public participation as a necessity in important EU policy documents lends impetus for an investigation about how law provides for public participation in EU GMO regulation. In 2001, the Commission's White Paper on European Governance signified the need to make policy-making more inclusive through stronger interaction with civil society.⁸⁹ It recommended 'wide participation throughout the policy chain – from conception to implementation' to ensure the 'quality, relevance and effectiveness of EU policies'.⁹⁰ A similarly strong invocation of people-centred policies is found in the Life Sciences strategy of 2002, where the Commission set out its vision of developing 'sustainable and responsible policies' in healthcare, agriculture and food production,

⁸⁴ Jenny Steele, 'Participation and deliberation in environmental law: Exploring a problem-solving approach' (2001) 21 *Oxford Journal of Legal Studies* 415.

⁸⁵ See for instance, World Commission on Environment and Development, *Our Common Future* (Oxford University Press 1987).

⁸⁶ Maria Lee and Carolyn Abbot, 'The usual suspects? Public participation under the Aarhus Convention' (2003) 66 *Modern Law Review* 80, 83; Simon Chambers, 'Deliberative democratic theory' (2003) 6 *Annual Review of Political Science* 307, 308.

⁸⁷ *Ibid*, Lee and Abbot 84.

⁸⁸ Jon Elster (ed.), *Deliberative Democracy* (Cambridge University Press 1998); John Dryzek, *Deliberative Democracy and Beyond: Liberals, Critics, Contestations* (Oxford University Press 2002); John Dryzek and Simon Niemeyer, *Foundations and Frontiers of Deliberative Governance* (Oxford University Press 2010).

⁸⁹ COM (2001) 428 final, 25 July 2001.

⁹⁰ *Ibid* 10.

including in agricultural biotechnologies.⁹¹ However, both documents deny the necessity of translating this expression of interest in public participation into justiciable principles.⁹² Notwithstanding this, the acceptance of the necessity of public participation in EU governance in these documents is important for our purpose.⁹³

A number of international legal instruments underline the importance of public participation, the need to institutionalize a regulatory framework that allows effective participation in public issues, and even recognize its special relevance in the case of GMOs. Principle 10 of the Rio Declaration calls for the provision of appropriate access to information, the opportunity to participate in decision-making processes, and effective access to judicial and administrative proceedings for environmental issues towards realization of sustainable development through better connection between the governed and those who govern.⁹⁴ The Aarhus Convention (of which the EU is a signatory)⁹⁵ stipulates parties must make provision for public participation in decisions on specific environmental activities; in plans, programmes and policies relating to the environment; as well as in preparation of executive regulation and

⁹¹ European Commission, 'Life Sciences: A Strategy for Europe' COM (2002) 27 final, 23 January 2002, 28.

⁹² Despite its strong endorsement of wide participation, the White Paper on European Governance precluded the employment of legal rule, due to 'excessive rigidity and risk slowing the adoption of particular policies' (n. 89) 17. Galligan found this reasoning unconvincing since the claim that such an approach would lead to rigidity is bluntly asserted without the slightest concern for any supporting evidence, while the wisdom of a legal approach that may complement other approaches to participation is not even considered. 'The White Paper plainly lost an opportunity to formulate a rigorous, properly researched approach to public participation in governance'; Denis Galligan, 'Citizen's rights and biotechnology regulation' in Francesco Francioni (ed.), *Biotechnologies and International Human Rights* (Hart Publishing 2007) 335, 350.

⁹³ Galligan (n. 92) 351.

⁹⁴ Principle 10 of the Rio Declaration on Environment and Development 1992, (1992) 31 *International Legal Materials* 874.

⁹⁵ Council Decision of 17 February 2005 on the conclusion, on behalf of the European Community, of the Convention on access to information, public participation in decision-making and access to justice in environmental matters (2005/370/EC) OJ L 124/1. Public participation in decision-making is identified as one of the three pillars of the Aarhus Convention, the others being public access to information and public access to justice. See further, Maria Lee, 'Public participation, procedure, and democratic deficit in EC environmental law' (2004) 3 *Yearbook of European Environmental Law* 193.

generally applicable legally binding normative instruments.⁹⁶ The Almaty amendment to the Aarhus Convention specifically requires Members to introduce an additional regime for public participation in decisions on the deliberate release into the environment and placing on the market of GMOs.⁹⁷ This amendment stipulates an early and effective public participatory measure that is prior to making specific decisions on the release of GMOs, and underlined that ‘due account is taken of the outcome of the public participation procedure’.⁹⁸

An argument for participation, that is, for mechanisms that allow the public to meaningfully influence regulatory decisions, at a broad policy level or in respect of individual releases of GMOs – could be criticized for the institutional costs incurred and the (im)practicalities involved. Prescriptions of how to create such organizational structures within public bodies are not envisaged as part of this book; such institutional and organizational questions are not germane to the central question of this book. Within its mandate of examining the extent of legal effectuation of public participation in GMO regulation, this book seeks to carefully analyse the relevant provisions to see whether they effectuate participation, and, further, whether the regulatory tools have conceptual possibilities for law to incorporate such participatory requirements.

How participation can be structured is intricately related to who is recognized as capable of participation, and how that public is conceptualized. Lee and Abbot focus on a serious limitation of the Aarhus

⁹⁶ See Articles 6, 7 and 8 of Aarhus Convention. Article 6 (8) requires Members to take due account of the outcome of the public participation in decisions on specific activities. Article 7 mandates parties to provide opportunities for public participation in the preparation of policies relating to the environment, to the extent appropriate. Article 8 requires parties to strive for promoting effective public participation at an appropriate stage, and while options are still open, during the preparation by public authorities of executive regulations and other generally applicable legally binding rules that may have a significant effect on the environment. It stipulates Members must take the result of the public participation into account, as far as possible.

⁹⁷ Decision II/1 on genetically modified organisms, Amendment to the UNECE Convention on access to information, public participation in decision-making and access to justice in environmental matters adopted at the second meeting of the Parties held in Almaty, Kazakhstan, on 25–27 May 2005, UN ECOSOC ECE/MP.PP/2005/2/Add.2 20 June 2005, <http://www.unece.org/index.php?eID=tx_nawsecured1&u=0&filefileadmin/DAM/env/documents/2005/pp/ece/ece.mp.pp.2005.2.add.2.e.pdf&t=1322648754&hash=06f4d8cfd8f65640718ab1c2f47a43a204d92566> last accessed 20 November 2011.

⁹⁸ Annex I bis (7) *ibid*.

Convention regarding the real nature of participation.⁹⁹ They observe the relative privileging of NGOs in the Aarhus Convention:

[E]ven if environmental interest groups represent one particular view of the public interest, arguably creating a public interest in their involvement, they cannot claim to represent the public ... What we can say is that since industry or developers are undoubtedly involved in any decision making process, environmental interest groups provide an invaluable alternative input, particularly since negotiation with the regulated industry is the starting point for much regulatory reform.¹⁰⁰

The public sphere can be imagined as a public zone of mediation between the state and individuals or groups, where various publics can participate in state processes of decision-making through negotiations, contestations and deliberations. Habermas' work on the public sphere is widely recognized as the primary reference point in understanding conceptualizations of the public sphere today, even by its critics who see it as inadequate and erroneous.¹⁰¹ Gardiner succinctly summarizes the central thesis of Habermas' work:

[I]n [the] eighteenth and nineteenth centuries, a distinct forum for rational public debate emerged in most Western European countries. It constituted an area of social life, separate from the state apparatus, in which citizens

⁹⁹ Lee and Abbot (n. 86) 107.

¹⁰⁰ Ibid 87.

¹⁰¹ Jurgen Habermas, *The Structural Transformation of the Public Sphere* (Polity 1989). Significant work on the public sphere already existed when Habermas originally wrote his book in German in 1962, for instance of Bakhtin and Dewey (cited later in this footnote). The ideal of rational and informed discussion of public policy is said to be one which runs like a red thread through the whole of Habermas' work – William Outhwaite, *Habermas: A Critical Introduction* (Stanford University Press 1994) 8. The Russian philosopher Bakhtin historicized the public sphere of eighteenth century Europe, like Habermas. In contrast, however, Bakhtin suggested that there was never a superseding of social antagonisms through sober and virtuous debate as a vehicle of rational consensus: Mikhail Bakhtin, *The Dialogic Imagination: Four Essays by M. M. Bakhtin* (Michael Holquist ed., Michael Holquist and Caryl Emerson trs, Texas University Press 1981). Habermas later clarified that historically a generalized commitment to collective and rational self-determination was neither present nor realized, and conceded that the public sphere in his conceptualization, more or less, comprised well-educated bourgeois males: Habermas (n. 106) 48. See also John Dewey, *The Public and its Problems* (Holt 1927). See further, Andreas Koller, 'The public sphere and comparative historical research: An introduction' (2010) 34 *Social Science History* 261.

gathered to converse about the issues of the day in a free and unrestricted fashion, either literally, as in the town square, or in the pages of diverse journals and periodicals. Debate proceeded according to universal standards of critical reason and argumentative structure that all could recognize and assent to; appeals to traditional dogmas, or to arbitrary subjective prejudices, were ruled inadmissible. Thus it was in the public sphere that ‘discursive will formation’ was actualized in a manner that represented *general* social interest, as opposed to a class or sectional one.¹⁰²

The Habermasian public sphere also sought to be a historical account of eighteenth–nineteenth century Germany, Britain and France, where ‘the critical reasoning of the public constitutes an effective steering force in both society and polity’.¹⁰³ An approximation of the male domain as the bourgeoisie public sphere was central in such an account, ‘founded upon free and equal access and upon willing consent between participants’.¹⁰⁴ The neglect of public spheres other than the male bourgeois public sphere in his approximation has been criticized for overlooking the ‘coercive and power-driven attributes of sectionalism, exclusiveness and repression’, ‘having profound consequences, not only for historical and social investigation but also for theoretical speculation’.¹⁰⁵ Habermas subsequently conceded the existence of a plurality of publics:

[T]he modern public sphere now comprises several arenas in which ... a conflict of opinions is fought out more or less discursively. This conflict does not merely involve a competition among various parties of loosely associated private people; from the beginning a dominant bourgeois public *collides* with a plebeian one.¹⁰⁶

¹⁰² Michael E. Gardiner, ‘Wild publics and grotesque symposiums: Habermas and Bakhtin on dialogue, everyday life and public sphere’ in Nick Crossley and John Michael Roberts (eds), *After Habermas: New Perspectives on the Public Sphere* (Blackwell 2004) 28.

¹⁰³ John Michael Roberts and Nick Crossley, ‘Introduction’ in Nick Crossley and John Michael Roberts (eds), *After Habermas: New Perspectives on the Public Sphere* (Blackwell 2004) 1.

¹⁰⁴ See Geoff Eley, ‘Nations, publics, and political cultures: Placing Habermas in the nineteenth century’ in Craig Calhoun (ed.), *Habermas and the Public Sphere* (MIT Press 1996) 321.

¹⁰⁵ Roberts and Crossley (n. 103) 11–12. See further, *ibid*; Janet Siltanen and Michelle Stanworth, ‘The politics of private woman and public man’ in Janet Siltanen and Michelle Stanworth (eds), *Women and the Public Sphere: A Critique of Sociology and Politics* (Hutchinson 1984).

¹⁰⁶ Jürgen Habermas, *Moral Consciousness and Communicative Action* (Polity 1992) 430. Emphasis added. Some theorists extend this to an argument that the bourgeois public sphere itself arose as a response to the ambivalent,

This concept of multiple publics is developed by feminists like Nancy Fraser, and others like Craig Calhoun, to argue for recognition of the legitimate discursive claims of those residing in 'alternative public spheres', or counterpublics that are 'parallel discursive arenas where members of subordinated social groups invent and circulate counter discourses'.¹⁰⁷ Fraser points to the fallacy in the idea that inequalities between participants can be bracketed during discursive deliberation, when in fact it only 'conceals real inequalities' including access to resources, which can have 'drastic consequences for the outcome of debate and discussion'.¹⁰⁸ She points out that fixed boundaries on topics of public discussion that are structured around a common interest do not exist a priori, but are products of discourse and dialogue. Formation of counterpublics permits 'subordinated groups to formulate oppositional interpretations of their identities, interests and needs'.¹⁰⁹ She therefore argues that a participatory parity in the public sphere requires 'the elimination of systematic social inequalities', and not merely its bracketing, and in situations where such inequality persists it is preferable to construe a 'multiplicity of mutually contestatory publics' as opposed to a 'single modern public sphere oriented solely to deliberation'.¹¹⁰

Following this, the book seeks to investigate if and how existing policy commitments to public participation have been transposed to legal justiciability. The choice of public participation as a referral point in this investigation is notwithstanding the acknowledgement of the problems posed by heuristics of public participation, viz., the real possibility that public participation may 'simply hold a mirror up to the pattern of power in the community; if the rich and well-organized are heard, while the

expressive and effectual practices of the Other – Michel de Certeau, *The Practice of Everyday Life* (University of California Press 1984); and further 'actively suppresses sociocultural diversity in constituting an arena inimical to difference' – Robert Asen, 'Seeking the "counter" in counterpublics' (2000) 10 *Communication Theory* 424, 425.

¹⁰⁷ Nancy Fraser, 'Politics, culture, and the public sphere: Toward a post-modern conception' in Linda J. Nicholson and Steven Seidman (eds), *Social Postmodernism: Beyond Identity Politics* (Cambridge University Press 1995) 291, 295. See further, Michael Warner, 'Publics and counterpublics' (2002) 88 *Quarterly Journal of Speech* 413; Roberts and Crossely (n. 103) 14; Craig Calhoun, 'The public sphere in the field of power' (2010) 34 *Social Science History* 30.

¹⁰⁸ Fraser (n. 107) 291.

¹⁰⁹ Ibid 116.

¹¹⁰ Ibid 295.

poor and minorities are weakly represented'.¹¹¹ Nevertheless, it seeks to investigate the possible (in)consistencies between the claim to participation in EU policy documents and its transposition in EU GMO regulation through legal and justiciable principles. This is with an ambition that such a comparison can spark a genuine shift as a result of which patterns of power and productions of rationality will also be questioned. A legal engagement with public concerns about EU GMO regulation is required for factors identified earlier in this chapter: a) normative aspirations for further democratization of law to be proximate to public preferences; b) in policy areas involving perceptible, considerable and persistent public disquiet; c) especially in a polity where concerns about the democratic deficit are repeatedly raised; and d) consequentialist advantages of public participation for development of socially appropriate technology. Recognition of the legitimate issues of power imbalances and regulatory capture (that can beset both classical regulatory mechanisms and public participatory mechanisms) need not be normatively debilitating for the investigation in this book, but can be taken as an important factor that needs cognizance and additional attention.

The investigation in this book regarding existing and possible room in the EU regulation of GMOs for participation of publics outside of techno-scientific communities moves beyond a review of relevant legislation. As Glowka noted: 'General references to public participation may not translate into actual public participation if additional criteria are not provided on the form that public participation can take'.¹¹² After providing a broad description of legislation that frames the EU regulation of GMOs in Chapter 2, including labelling, coexistence and liability, the book identifies safety as the central element in the regulatory framework for release of GMOs. The concept of risk and the principle of precaution are seen as two important motifs in the regulatory pursuit of safety. Later chapters undertake a conceptual exploration of these two motifs to examine if and how notions of participation of publics, which are wider than expert scientific communities, are conceptually central in them.

The third chapter examines the concept of risk as a regulatory tool to pursue safety, and is followed by an exploration of the nature and

¹¹¹ Lee and Abbot (n. 86) 107.

¹¹² Lyle Glowka, *Law and Modern Biotechnology: Selected Issues of Relevance to Food and Agriculture* (FAO legislative study 78, FAO 2003) 51 <<ftp://ftp.fao.org/docrep/fao/006/y4839E/y4839E00.pdf>> last accessed 12 January 2011.

implementation of the precautionary principle in Chapter 4. The conceptual possibilities of bringing wider public concerns within risk and precaution are examined. The fifth chapter describes the global rules related to the regulation of GMOs in the GATT/WTO framework and the Cartagena Protocol to the Convention on Biodiversity. Through this, the chapter examines whether these global rules provide room for possible improvements of EU safety regulation that include public participation. This chapter also includes a short section that describes the manner in which the WTO framework recognizes Members' regulatory action to protect public values. Chapter 6 investigates different regulatory strategies employed for protecting public values related to GMOs in the EU. Continuing from the description of labelling and coexistence from Chapter 2, the sixth chapter elaborates on the purpose and limitations of furthering the regulatory recognition of ethical plurality as a strategy to pursue public values about GMOs. The chapter analyses the nature and quality of participation that is possible through consumer decisions in the regulation of research, development and use of GMOs. It further examines the use of public bioethics committee reports as a marker of public values regarding the regulation of GMOs. This examination is towards analysing the room made available for public participation in EU regulation of GMOs through such reports. In conclusion, the ambition of the book is restated for the sake of clarity. It describes relevant EU laws to identify and analyse the room available or possible for public participation in the EU regulation of GMOs. The first step for such a project is a cursory description of the EU legal framework for GMO regulation, attempted in the next chapter.