Framing Risk Regulation: A Critical Reflection

*Elizabeth Fisher**

Over a decade ago I was involved in a group project that focused on developing a regulatory model concerning the implementation of the precautionary principle in the EU.[1] The project involved a number of workshops and in those workshops I used to joke about the fact that while there were many different frameworks being produced to represent risk regulation, these diagrams basically fell into two different categories. In the first category there were those diagrams that characterised risk regulation as a linear process involving usually a scientific process of risk assessment and then political processes of risk management and risk communication.[2] In the second category there were those diagrams that had lots of looping arrows going all over the place that represented the fact that risk regulation was an iterative process that constantly involved many scientific, socio-political and other inputs.[3]

Behind my joking was a sense of hope. The linear diagrams did have their minimalist appeal, but the messy diagrams captured much of the reality of this area of regulatory practice. My hope sprang from the fact that the messy diagrams were products of a number of high profile institutions engaging in broad ranging discourses about how to develop workable and legitimate frameworks for risk regulation.[4] These diagrams were recognition of the fact that many different choices could be made in how to evaluate future threats and act in response to them. Fast forward a decade and I am less hopeful. It is still the case that there is a range of different scholarly approaches concerning how risk regulation is represented, but there is far less vibrancy in the debate. The linear model of risk regulation has come to dominate much of the policy and legal discourse. Indeed, for many readers of this journal it will be hard to imagine any other.

In this scholarly comment I critically reflect on the current state of affairs and in doing so make three points. First, risk regulation is a subject that has developed in a haphazard way over a short space of time and the practice and study of it involves some very profound intellectual challenges. In such cases, one would expect to see a healthy debate over how it should be understood and characterised. The debate in the 1990s is an example of this. Second, this debate has subsided and risk regulation is primarily now framed as a linear process. While this situation is understandable, it is not desirable. Third, greater expertise and scholarly imagination needs to be brought to debates about how we represent risk regulation.

Three points should be made before starting. First, this piece is less a scholarly analysis and more a scholarly comment and my purpose in writing it is to encourage debate. Second, my interest in frameworks of risk regulation is due to the fact that the frameworks that are developed for risk regulation are not just tools for decision-making but they also 'represent the world' and in so doing 'tacitly define the horizons of possible and acceptable action'.[5] Thus the frameworks we use will have direct consequences for how risk regulation operates and what is understood to be valid action on the part of regulatory decision-makers. Third, this is not just another article arguing that values should be taken into account in risk regulation. Values and technical analysis are always integral to risk regulation, indeed that is why we have

* Reader in Environmental Law, Faculty of Law and Corpus Christi College, University of Oxford. I am thankful to the editors, an anonymous referee, and the participants of the 'Mapping the Global Regulatory Space for Risk Governance' workshop at the EUI, 28–29 May 2012 for comments on an earlier draft of this article. Any errors or omissions remain my own.

1 PRECAUPRI. Ortwin Renn, *et al.*, *The Application of the Precautionary Principle in the European Union: Regulatory Strategies and Research Needs to Compose and Specify a European Policy on the Application of the Precautionary Principle (PrecauPri)*, (Stuttgart: Centre for Technology Assessment 2003).

2 National Research Council, *Risk Assessment in the Federal Government: Managing the Process*, (Washington DC: National Academy Press 1983).

3 National Research Council, *Understanding Risk: Informing Decisions in a Democratic Society*, (Washington DC: National Academy Press 1996) and Royal Commission on Environmental Pollution, *Setting Environmental Standards, 21st Report*, (London: HMSO 1998).

4 Besides those already quoted also see Presidential/Congressional Commission on Risk Assessment and Risk Management, *Framework for Environmental Health Risk Management – Volume One*, (Washington DC: 1997); National Research Council, *Science and Judgment in Risk Assessment*, (Washington DC: National Academy Press 1994); Carnegie Commission on Science Technology and Government, *Risk And The Environment: Improving Regulatory Decision Making*, (New York: 1993); and Parliamentary Office of Science and Technology, *Safety In Numbers*, (London: HMSO 1996).

5 Expert Group on Science and Governance, *Taking European Knowledge Society Seriously*, (Brussels: European Commission 2007).

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

risk management. My point is we need to reimagine how the relationship between them is, and can be, configured.

I. Risk regulation: A subject in search of a framework?

Risk regulation is a term that has come from nowhere. Before the late 1990s it was a phrase hardly ever in use, but now it is part of both academic and policy discourse.[6] The title of this journal is a perfect example of this fact. The concept of risk regulation now has a range of connotations. Definitions vary in terms of subject areas and types of governance covered. In regards to the former, for some the term narrowly refers to 'governmental interference with market or social processes to control adverse consequences to health'.[7] For others the term refers all areas where future threats are regulated including criminal justice and financial regulation.[8] In relation to the latter, the term is also understood to be synonymous with risk governance and thus also involving private forms of ordering.[9]

The simplicity of the 'risk regulation' moniker thus belies the fact that there are differences of opinion over what exactly is entailed in regulating risk. For some, the term is referring to a specific type of regulatory method, while for others it is a general term that refers to any governance activity concerned with regulating 'threats'. The term also conceals the fact that many lawyers and policy-makers find the subject not easy to understand. There are many reasons for this incomprehensibility, but three are particularly useful to highlight. The first is that there is very little coherence in the way in which risk regulation regimes have developed in a jurisdiction. Different future threats are regulated in different ways due to a mixture of legal culture, socio-political catalysts, and sheer historical accident.[10] Risk regulation is thus an impenetrable tangle of legislation, secondary legislation, policies, institutional structures, and processes. Such a tangle does not always yield easily to scholarly or policy analysis.

The second reason for incomprehensibility is due to the fact that risk regulation is inherently interdisciplinary and there is no easy way to create a comprehensible framework across disciplines.[11] The regulation of a threat requires the integration of science, law, and socio-political discourses but few scholars or policy-makers have expertise in all these areas.[12] Third, in an era of economic, legal, political and social globalisation the lack of coherence, and the interdisciplinary nature, of risk regulation becomes magnified. This is because there is considerable divergence between legal cultures in how risk is framed and regulated, and thus how the issues of coherence and interdisciplinarity managed. There is a growing body of diverse literature that charts those differences.[13]

This last issue of globalisation is of more recent vintage, but the issues of coherence and interdisciplinarity were recognised early on in debates over risk regulation. During the 1990s working groups focused on developing representations, in the forms of models and frameworks of risk regulation, as a way of addressing this incomprehensibility. Model-making is of course inherent in many areas of scholarship and policy and models, taxonomies and maps are ways of making sense of the world.[14] Yet it is fair to say the development of such models in the context of risk regulation held a particular fascination and the literature of this era is a rich one, particularly

6 Consider the opening statement of the HSE in Health and Safety Executive, *Reducing Risks, Protecting People*, (London: Health and Safety Executive, 1999).

7 Christopher Hood, Henry Rothstein and Robert Baldwin, *The Government of Risk: Understanding Risk Regulation Regimes*, (Oxford: Oxford University Press, 2001) at p. 3.

8 Jonathan Wiener, "Risk Regulation and Governance Institutions" OECD (ed.) *Risk and Regulatory Policy: Improving the Governance of Risk*, (Paris: OECD Reviews of Regulatory Reform, 2010).

9 Ortwin Renn, *Risk Governance: Coping With Uncertainty in a Complex World*, (London: Earthscan, 2008).

10 Carol Rose, "Environmental Law Grows Up (More or Less) And What Science Can Do to Help", 9 *Lewis and Clark Law Review* (2005), pp. 273 and Elizabeth Fisher, *et al.*, "Maturity and Methodology: Starting a Debate about Environmental Law Scholarship", 21 *Journal of Environmental Law* (2009), pp. 213–250.

11 Devra Davis, "The Shotgun Wedding of Science and Law: Risk Assessment and Judicial Review", 10 *Columbia Journal Of Environmental Law* (1985), pp. 67 and Carl Cranor, *Regulating Toxic Substances: A Philosophy of Science and the Law*, (New York: Oxford University Press, 1993)

12 On the ways in which they are integrated see Elizabeth Fisher, *Risk Regulation and Administrative Constitutionalism*, (Oxford: Hart Publishing, 2007) at Chapter One.

13 David Vogel, "The Politics of Precaution: Regulating Health, Safety and Environmental Risks in Europe and the United States" (Princeton: Princeton University Press, 2012); Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States*, (Princeton: Princeton University Press 2005); and Fisher, *Risk Regulation and Administrative Constituitonalism, supra* note 12.

14 Angela Creager, Elizabeth Lunbeck and M.Norton Wise (eds), *Science Without Laws: Model Systems, Cases, Exemplary Narratives*, (Durham: Duke University Press, 2007) and Rob Kitchin, Martin Dodge and Chris Perkins, "Introductory Essay: Conceptualising Mapping" Rob Kitchin, Martin Dodge and Chris Perkins (eds), *The Map Reader*, (Oxford: Wiley-Blackwell, 2011).

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

in the policy realm. Let me provide a few examples from the US and the UK.

Most readers will know of the Red Book – the National Research Council (NRC)'s report of 1983 *Risk Assessment in the Federal Government – Managing the Process*.[15] That report described risk regulation as a process of risk analysis that was divided into a scientific process of risk assessment and a political process of risk management and that division is now treated by many as a foundational assumption of the subject. What is less well known, is that the Red Book was only one contribution to an on-going discourse about how risk should be understood and regulated in Federal agencies in the US.[16] From the mid 1970s onwards, there has been a debate between different Federal agencies on the utility of risk assessment. Views on its potential have varied.[17] This debate was interrelated with US judicial review litigation at the time and the Red Book was commissioned on instruction by Congress after the Supreme Court decision in *Industrial Union Department, AFL-CIO v American Petroleum Institute*.[18] The Red Book was thus embedded in, and a product of, US legal culture.

In 1994 the NRC in *Science and Judgment* placed the 1983 Red Book report in context[19] and argued that it is 'not necessary – indeed, it is inadvisable to provide for a physical separation of the two activities'.[20] Likewise, in that report they stated that '[r]isk assessments should be undertaken with careful attention to the contexts in which those assessments will be used'.[21] Furthermore in 1996, another committee of the NRC published *Understanding Risk* in which they recast environmental risk regulation as an exercise in 'risk characterisation'. Risk characterisation was the final step of risk assessment as outlined in the Red Book[22] but in the 1996 report it was understood not just as an analytical exercise but an 'analytical-deliberative process' that needed to be a 'decision-driven activity'.[23] Furthermore, in 1997 the Presidential/Congressional Commission on Risk Assessment and Risk Management provided a more cumulative and ongoing picture of risk regulation that resulted in a more iterative relationship between analysis and decision-making.[24] In 2009, the NRC published *Science and Decisions* in which they considered a variety of ways to improve the utility of risk assessment.[25] Thus what can be seen is an ongoing debate.

A similar discourse can be seen in the UK. Thus in 1992 the Royal Society in the UK attempted to provide an interdisciplinary account of public decision-making about risk. The resulting publication, *Risk: Analysis, Perception Management* ended up as 'six independent chapters' rather than as 'a report of the Society'.[26] The chapters analysed risk from a range of different disciplinary perspectives and it is clear that there were real challenges in even developing universal definitions of risk. Such a report highlighted the profound problems of integrating different understandings of risk. In 1998 the Royal Commission on Environmental Pollution in their report *Setting Environmental Standards* stressed the importance of seeing the relationship between analysis and deliberation as well as understanding the importance of practical judgment in standard setting.[27] Alongside these reports were also a number of other government reports discussing the nature of risk, risk assessment, and risk regulation.[28]

What can thus be seen is that by the late 1990s there was thus a very active and mainstream policy debate going on about appropriate and legitimate frameworks for risk regulation. Besides the contributions above, there was also considerable work being done on related issues such as the precautionary

15 NRC, *Risk Assessment in the Federal Government*, *supra* note 2.

16 Sheila Jasanoff, *Risk Management and Political Culture: A Comparative Study of Science in the Policy Context*, (New York: Russell Sage Foundation,1986) and Elizabeth Fisher, "Risk and Environmental Law: A Beginner's Guide" Benjamin Richardson and S. Wood (eds), *Environmental Law for Sustainability*, (Oxford: Hart Publishing, 2006).

17 NRC, *Science and Judgment in Risk Assessment*, *supra* note 4, at p. 32.

18 448 US 607 (1980).

19 NRC, *Science and Judgment in Risk Assessment*, *supra* note 4 at Chapter Two.

20 *Ibid*. at p. 34.

21 *Ibid*. at p. 34.

22 NRC, *Risk Assessment in the Federal Government*, *supra* note 2 at pp. 36–7.

23 NRC, *Understanding Risk*, *supra* note 3 at Chapter One.

24 Presidential/Congressional Commission on Risk Assessment and Risk Management, *Framework for Environmental Health Risk Management, supra* note 4.

25 National Research Council, *Science and Decisions: Advancing Risk Assessment*, (Washington DC: National Academies Press, 2009)

26 Royal Society, *Risk, Analysis, Perception and Management*, (London, 1992) at p. iii.

27 Royal Commission on Environmental Pollution, *Setting Environmental Standards, supra* note 4 at Chapter Eight.

28 Documented in Elizabeth Fisher, "Drowning by Numbers: Standard Setting in Risk Regulation and the Pursuit of Accountable Public Administration", 20 *Oxford Journal Of Legal Studies* (2000), pp. 109–130.

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

principle and scientific uncertainty.[29] There are three particular things to note about this debate. The first is that much of this went on within public institutions and on the basis that risk regulation frameworks were capable of revision. Second, much of the debate was driven by a concern that the risk assessment/risk management framework was too formal a distinction and that there needed to be a greater focus on context and the need to produce a pragmatic and practical regulatory regime. Third, while many of these reports did focus on the need to take into account values, the point was not that values should override science but that the risk assessment/risk management distinction failed to capture either the nuanced relationship between the two or what was really at stake in risk regulation.[30]

II. The current situation

Fast forward a decade and while there are many policy documents and scholarly articles on the topic of risk regulation there is far less debate about the frameworks under which it should operate. This is not to say that there are no contributions like those above,[31] but rather that the risk assessment/risk management framework has become the dominant account of risk regulation. As Aven notes both practices 'are in many respects acknowledged as scientific disciplines *per se*: there are many master and Ph.D programs worldwide covering the fields as well as a considerable number of scientific journals and conferences'.[32] For many of those working in this area the division is less a reality and more a shorthand for the fact that risk regulation involves a technical analysis that needs to be integrated into a decision-making process and thus the distinction has little rigidity. For many lawyers and policy-makers however, risk regulation is understood to be a linear process of risk assessment and risk management.[33] This state of affairs can be seen as due to at least four overlapping reasons which I will consider below.

The first reason for the dominance of the risk assessment/risk management distinction is that it has become solidified into legal frameworks, doctrines and practices, particularly in the food safety context.[34] Thus Article 6 of Council Regulation 178/02/EC laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety[35] states:

1. In order to achieve the general objective of a high level of protection of human health and life, food law shall be based on risk analysis except where this is not appropriate to the circumstances or the nature of the measure.
2. Risk assessment shall be based on the available scientific evidence and undertaken in an independent, objective and transparent manner.
3. Risk management shall take into account the results of risk assessment, and in particular, the opinions of the European Food Safety Authority, other factors legitimate to the matter under consideration and the precautionary principle where the conditions laid down in Article 7(1) are relevant, in order to achieve the general objectives of food law established in Article 5.

There are also many examples where the distinction is simply presumed to exist. The WTO SPS agreement is one such example. With that said the WTO SPS Agreement requires an 'assessment of risk' that takes into account 'risk assessment techniques of international organisations',[36] the Appellate Body makes clear that does not entail a sharp distinction between risk assessment and risk man-

29 Adrian Deville and Ronnie Harding, *Applying the Precautionary Principle*, (Sydney: Federation Press 1997); and Silvio Funtowicz and Jerome Ravetz, "Three Types of Risk Assessment and the Emergence of Post Normal Science" S. Krimsky and D. Golding (eds), *Social Theories of Risk*, (Westport: Praeger, 1992)

30 Steven Rayner and Robin Cantor, "How Fair is Safe Enough?: The Cultural Approach to Societal Technology Choice", 7 *Risk Analysis* (1987), pp. 3–9.

31 Committee to Review the OMB Risk Assessment Bulletin – National Research Council, *Scientific Review of the Proposed Risk Assessment Bulletin from the Office of Management and Budget*, (Washington DC: National Academy of Sciences, 2007); NRC, *Science and Decisions, supra* note 25; International Risk Governance Council, *An Introduction to the IRGC Framework*, (Geneva: International Risk Governance Council, 2008); and Expert Group on Science and Governance, *Taking European Knowledge Society Seriously*, *supra* note 5.

32 Terje Aven, "Foundational Issues in Risk Assessment and Risk Management", 32 *Risk Analysis* (2012), pp. 1647–1656.

33 Working Party on Regulatory Management and Reform, *Risk and Regulation: Issues for Discussion*, (Paris: OECD GOV/PGC/REG(2006)1 2006).

34 Committee to Review the OMB Risk Assessment Bulletin – National Research Council, *Scientific Review of the Proposed Risk Assessment Bulletin from the Office of Management and Budget*, *supra* note 31; David Demortain, "Enabling Global Principle-Based Regulation: The Case of Risk Analysis in the Codex Alimentarius", 6 *Regulation and Governance* (2012), pp. 207–224.

35 OJ [2002] L31, p. 1

36 Article 5.1

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

agement.[37] Furthermore, risk assessment and risk management can mean many different things in different contexts.[38]

The second reason for the dominance of the risk assessment/risk management distinction is because it seemingly makes comprehensible the interdisciplinary challenges of this area by separating out science and politics. Risk assessors do the science 'bit' and risk managers the law/policy 'bit'. Indeed, one of the driving factors behind the Red Book was to 'foster a constructive partnership between science and government'[39] and dividing these two activities was understood as the best means of operating that partnership. The point of the National Research Council reports since then has been however, to highlight the fact that the relationship does not work in the way that the linearity of the risk assessment/risk management framework suggests. This is where the loopy arrows are relevant – they are crude representations of the need to have a more iterative relationship between analysis and policy. Moreover, as the experience with the holding of risk regulators to account highlights, policy-makers and lawyers do need to have an understanding of how analysis is carried out, because within that analysis lies the reasoning and rationale for regulatory action.[40]

More significantly, although risk assessment is a scientific process it is not a scientific method. As the NRC noted in 1994:

> Risk assessment is not a single, fixed *method* of analysis. Rather it is a systematic *approach* to organising and analysing scientific knowledge and information [my emphasis].[41]

Policy-makers and lawyers have tended to presume risk assessment is a scientific method so that fundamental questions about how scientific analysis should be carried out are hidden from view.[42] To put the matter another way, there has not been enough focus on the scientific methods deployed in assessing risk too much on the decision-making process writ large.[43]

The third reason for the popularity of the risk assessment/risk management model is its administrative/socio-political significance. Thus Fisher has argued the model is consistent with a rational-instrumental paradigm of administrative constitutionalism.[44] Such a paradigm is attractive because it seems to suggest that regulators are simply applying the facts to a legislative mandate in regulating risk. If this is the case then their activities are easy to control. Heyvaert makes a similar comment in relation to the EU when she notes that:

> *The separation [between risk assessment and risk management] performs a vital function in amplifying the effect of the necessity of regulatory outcomes, and allowing the Commission as decision-maker to project the image of dispassionate, neutral arbiter of a exogenously generated information rather than an unconstrained regulatory force.*[45]

The linear model is 'quintessentially managerial'[46] and it 'maps out decision-making procedures that link assessments to control options'.[47] The risk assessment/risk management model is thus attractive because it seemingly suggests that the messiness of risk regulation can be contained and it should come as no surprise that the promotion of it has tended to be through top down accountability systems.[48] Jasanoff notes that:

> Formal risk assessment....is the 'songline' of contemporary risk society's anxiety about its own technological achievements. Threats dimly con-

37 Appellate Body Report, 16 January 1998, *European Communities – Measures Concerning Meat and Meat Products (Hormones)*, WT/DS26/AB at para 100.

38 L. Rhomberg, *A Survey of Methods for Chemical Risk Assessment Among Federal Regulatory Agencies*, (Washington DC: National Commission for Risk Assessment and Management, 1997); Commission of the European Communities, *First Report on the Harmonisation of Risk Assessment Procedures*, 2000); and Interdepartmental Liaison Group on Risk Assessment, *Use of Risk Assessment Within Government Departments*, (London: Health and Safety Executive, 1996).

39 NRC, *Risk Assessment in the Federal Government*, *supra* note 2 at p. 1.

40 Elizabeth Fisher, Pasky Pascual and Wendy Wagner, "Understanding Environmental Models in Their Legal and Regulatory Context", 22 *Journal of Environmental Law* (2010), p. 251–283.

41 NRC, *Science and Judgment in Risk Assessment*, *supra* note 4 at p. 4.

42 But are raised in reports such as ibid. and NRC, *Science and Decisions: Advancing Risk Assessment*, (Washington DC: National Academies Press, 2009), *supra* note 25.

43 Pasky Pascual, Wendy Wagner and Elizabeth Fisher, "Making Methods Visible: Improving the Quality of Science Based Regulation", 2, *Michigan Journal of Environmental and Administrative Law* (2013), in press.

44 Fisher, *Risk Regulation and Administrative Constitutionalism*, *supra* note 12.

45 Veerle Heyvaert, "Governing Climate Change: Towards a New Paradigm for Risk Regulation ", 74 *Modern Law Review* (2011), pp. 817–844, at p. 826.

46 *Ibid*. at p. 834.

47 *Ibid*. at p. 820.

48 Fisher, "Drowning by Numbers", *supra* note 28.

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

> ceived in the mind must be sung in this melody to exist and be perceived, as well as predicted and controlled.[49]

Again, however, much scholarship and policy have shown the problems with assuming the managerial potential of the risk assessment/risk management divide. Problems include: it does not adequately deal with uncertainty; that it is open to abuse; that it distorts the purpose of decision-making; and that it does not result in effective administration.[50] Moreover, there are those who argue against the risk assessment/risk management divide on the normative grounds that it promotes a problematic understanding of government and society.[51]

The final reason to note concerning why the risk assessment/risk management framework has come to dominate is because in an era of regulatory globalisation, the framework seems to address the problems of legal, cultural and regulatory differences between jurisdictions. This is partly due to the fact, as seen above, the risk assessment/risk management divide gives the impression of being a neutral distinction that can operate in any context. In other words, it is a way of seemingly addressing the incomprehensibility created by globalisation. But the framework is also playing a more nuanced role. Like the process of map-making by the Colonial powers, the framework acts as an 'immutable mobile' in that it allows for what is being governed to be 'mobilised, gathered, archived, coded, recalculated and displayed' as it moves across a range of different jurisdictions and contexts.[52] This is particularly significant in the transnational context – risk assessment and risk management seemingly displaces the need for more nuanced and messy interactions between jurisdictions that have different views on how to evaluate and manage threats.[53] The immutable quality arises particularly because the risk assessment/risk management model is about process and not substance and is particularly important in an era in which both multi-level and private governance networks are having a role to play.[54] Yet the capacity of the risk assessment/risk management framework to be an 'immutable mobile' is open to question. Many studies have shown risk regulation and the processes of risk assessment and risk management are profoundly shaped by legal and socio-political culture.[55]

The four reasons above do overlap, but my purpose in identifying them is to encourage some reflection. Each reason is equally important and a reminder that risk regulation has many different dimensions. Overall, the reasons for why the risk assessment/risk management has come to dominate are understandable but as the analysis above shows, they are not overwhelming. The risk assessment/risk management model is not entrenched in law and practice, it does not necessarily deal with the problems of interdisciplinarity, its managerial goals are often unlikely to be achieved, and it is unclear whether it is really an immutable mobile. To put the matter another way, there still seems much which should be discussed and debated but yet while there are pockets of debate, for most the risk assessment/risk management frame dominates.

III. Where to from here?

The discussion above may suggest I am longing a return to a halcyon era in which young naïve academics could tell jokes about models of risk regulation. My argument is not that however (and let us face it – risk regulation comedy will always have a niche audience). The point about the above is to show how much we have narrowed our scholarly and policy vision when it comes to thinking about risk regulation. This settling of the field around a particular framework may be understood to be part of the maturing of a discipline but in light of the rapidity of the development of this area, the challenges of incompre-

49 Sheila Jasanoff, "The Songlines of Risk", 8 *Environmental Values* (1999), pp. 135–142, at p. 141.

50 Elizabeth Fisher, "Risk Regulatory Concepts and the Law" OECD (ed.) *Risk and Regulatory Policy: Improving the Governance of Risk* (Paris: OECD, 2010) at pp. 55–59.

51 Ibid.

52 Bruno Latour, *Science in Action*, (Cambridge: Harvard Uinversity Press, 1987) at p. 227. For a lengthier discussion of this see Elizabeth Fisher, "Risk and Governance" David Levi-Faur (ed.) *Oxford Handbook of Governance*, (Oxford: Oxford University Press, 2012).

53 Compare with Sheila Jasanoff, "A New Climate For Society", 27 *Theory, Culture and Society* (2010), pp. 233–253.

54 Giandomenico Majone, "Foundations of Risk Regulation: Science, Decision-Making, Policy Learning, and Institutional Reform", 1 *European Journal of Risk Regulation* (2010), p. 5 and Demortain, "Enabling Global Principle-Based Regulation", *supra* note 34.

55 David Winickoff, *et al.*, "Adjudicating the GM Food Wars: Science, Risk and Democracy in World Trade Law", 30 *Yale Journal of International Law* (2005), pp. 81–123; Jasanoff, *Designs on Nature*, *supra* note 13; and Fisher, *Risk Regulation and Administrative Constitutionalism*, *supra* note 12.

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

hensibility, and the room for practical debate, there is little evidence that this is an area that has 'matured'.

At this stage there is always a temptation to 'pull a rabbit out of the hat' and present the reader with another model or framework that addresses all the problems identified above. Clearly such a model would need loopy arrows and be quite messy. The problem with such metaphorical rabbits is their 'out of the hat' nature – they are unexpected and unexplained. My argument is that we need to move beyond the frameworks to really understand what regulating risk is all about. Our intellectual vision of risk regulation has narrowed and the solution is not to replace one framework with another but rather to broaden our field of vision. There are no simple ways of doing this, but I wish to make two pleas – a plea for expertise and a plea for imagination.

Whichever way one looks at it, risk regulation requires a range of expertises – in sciences, in law, in policy, in politics. The interdisciplinary dilemmas of the subject arise because of that fact. A focus on the risk assessment/risk management framework has resulted in not enough attention being paid to the fostering of the disciplinary foundations of the subject. Let me give two examples. First, the importance of this expertise can be seen in how a number of the recent NRC reports have focused on scientific methodologies involved in risk assessment rather than on the risk assessment process itself. The problem is that the focus on risk assessment and risk management is acting as an effective barrier to other scholars and policy-makers digging deeper into these debates.

Second, the risk assessment/risk management framework has also discouraged the development of real legal expertise in this area. The framework maps little of the internal legal content of risk regulation regimes and the problem is that the internal legal context is fundamental to how risk regulation operates in any legal culture – the statutes do count,[56] the case law does matter,[57] a similar term can be interpreted in different ways in different cultures,[58] practices of litigation are significant[59] – but the risk assessment/risk management framework provides no conceptual aides to making sense of this.[60]

My other plea is a plea for imagination. It needs to be recognised that the regulation of risk can be conceptualised, framed, and understood in a variety of ways that produce pragmatic frameworks for regulatory decision-making. Indeed, that is one of the most powerful lessons from comparative analysis in that it shows us that there are other ways in which to imagine and understand risk regulation. This is not only valuable because it illustrates different ways to regulate risk, but also because it allows reflection on how it is carried out in a particular jurisdiction.[61]

The problem is that the dominance of the risk assessment/risk management framework constrains thinking more creatively because it presumes that the regulation of risk is straightforward. It also means that alternative interpretations, with all their loopy arrows, tend to look eccentric.[62] Yet as the history of these regimes highlight there are many ways to understand such regimes which are workable and understood to be legitimate.[63] One need only to get back to the work of the Royal Commission on Environmental Pollution[64] in the UK and the National Research Council[65] in the United States to see that.

That is lamentable in itself but it is also problematic because it means that both scholars and policy-makers are failing to see how different types of environmental and public health risks may present problems for how we regulate and govern them. The most obvious example here is climate change. As Heyvaert wryly notes it is an issue that

56 Elizabeth Fisher, "Administrative Law, Pluralism and the Legal Construction of Merits Review in Australian Environmental Courts and Tribunals" Linda Pearson and Carol Harlow (eds), *Administrative Law in a Changing State: Essays in Honour of Mark Aronson* (Oxford: Hart Publishing, 2008).

57 Miguel Maduro, *We, The Court: The European Court of Justice and the European Economic Constitution*, (Oxford: Hart Publishing, 1998).

58 Pierre Legrand, "European Legal Systems Are Not Converging ", 45 *International and Comparative Law Quarterly* (1998), pp. 52–81.

59 Robert Kagan, *Adversarial Legalism: The American Way of Law*, (Cambridge: Harvard University Press 2003), Daniel Kelemen, *Eurolegalism: The Transformation of Law and Regulation in the European Union*, (Cambridge: Harvard University Press, 2011).

60 NRC, *Science and Decisions*, *supra* note 25 and Committee to Review the OMB Risk Assessment Bulletin – National Research Council, *Scientific Review of the Proposed Risk Assessment Bulletin from the Office of Management and Budget*, *supra* note 31.

61 Jasanoff, *Designs on Nature*, *supra* note 13.

62 Lawrence Busch, *et al.*, *Amicus Curiae Brief Submitted to the Dispute Settlement Panel of the World Trade Organisation in the Case of EC: Measures Affecting the Approval and Marketing of Biotech Products*, (2004).

63 Sidney Shapiro, Elizabeth Fisher and Wendy Wagner, "The Enlightenment of Administrative Law: Looking Inside the Agency for Legitimacy", 47 *Wake Forest Law Review* (2012), pp. 463–502.

64 Royal Commission on Environmental Pollution, *Setting Environmental Standards, 21st Report*, *supra* note 3.

65 NRC, *Understanding Risk: Informing Decisions in a Democratic Society*, *supra* note 3.

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press

> leaves risk regulation scholars with the unsettling impression that life is elsewhere. The most pressing environmental risk of our time challenges conventional assumptions about the nature of costs and benefits, about the relationship between risk and change, and about the meaning of uncertainty. It calls for regulatory responses that look very different from conventional risk regulation....[66]

Osfosky has emphasised its 'multi-scalar' nature[67] and Jasanoff has pointed to the challenges it creates for how we understand the interrelationship between facts and social orders[68] but very little of this is easily transcribed onto the risk assessment/risk management model. As Heyvaert notes there is a real danger in 'mapping new problems onto old formats'.[69]

IV. Conclusion

As Jasanoff notes,

> If a problem is framed too narrowly, too broadly, or wrongly the solution will suffer from the same defects.[70]

This article has been a plea for greater expertise and imagination in the representation of risk regulation. Such a plea may be the plea of a scholar but it is not a utopian plea. My argument is also a profoundly pragmatic one. It is not that we should scrap our existing frameworks but rather that we need to critically reflect on how risk regulation is currently represented in law, policy, and scholarship. The risk assessment/risk management distinction as a representation of risk regulation has its advantages but it also has serious disadvantages. My jokes of over a decade ago were simply about that fact.

66 Heyvaert, "Governing Climate Change", *supra* note 45 at p. 837.

67 Hari Osofsky, "The Geography of Climate Change Litigation Part II: Narratives of Massachusetts v. EPA", 8 *Chicago Journal of International Law* (2008), pp. 573–620.

68 Sheila Jasanoff, "A New Climate For Society", *supra* note 53, at p. 233.

69 Veerle Heyvaert, "Governing Climate Change", *supra* note 45 at p. 839.

70 Sheila Jasanoff, "Objectivity in Regulatory Science: Sites and Practices" Charles Camic, Neil Gross and Michele Lamont (eds), *Social Knowledge in the Making*, (Chicago: University of Chicago Press, 2011) at p. 179.

https://doi.org/10.1017/S1867299X00003299 Published online by Cambridge University Press