

Regulating Risks in the European Union

The Co-production of Expert
and Executive Power

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Regulating Risks in the European Union: The Co-production of Expert and Executive Power

MARIA WEIMER AND ANNIEK DE RUIJTER

I. Introduction

This edited volume has come to completion in the end of 2016—the year in which Donald Trump has been elected as the 45th President of the United States and the citizens of the United Kingdom voted to leave the European Union. Following these events the Oxford Dictionary declared the word ‘post-truth’ to be the international word of the year. Post-truth denotes ‘circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief’,¹ and refers to a general perception that we live in a time where ‘the truth has become so devalued that what was once the gold standard of political debate is a worthless currency.’²

In the public debate, experts and expertise have come under attack. One of the most striking remarks in this regard, in the pre-referendum Brexit public debate, was made by Michael Gove, the conservative politician and Brexit campaigner, who stated: ‘I think people in this country have had enough of experts.’³ Gove responded to arguments made by economic experts that the UK leaving the EU would have negative economic consequences. His remark, unwittingly, hints at what in this volume we refer to as co-production, the idea that expertise—generally referring to an authoritative claim to know better than others—when it is used in the context of law or policymaking, is not apolitical, but entangled with

¹ N Midgley, ‘Word of the Year 2016 is ...’ (English Oxford living dictionaries) <https://en.oxforddictionaries.com/word-of-the-year/word-of-the-year-2016>.

² *ibid*, citing a newspaper commentator.

³ M Deacon, ‘EU Referendum: Who Needs Experts When We’ve Got Michael Gove?’ *The Telegraph* (London, 6 June 2016) available at www.telegraph.co.uk/news/2016/06/06/eu-referendum-who-needs-experts-when-weve-got-michael-gove/.

the exercise of political power.⁴ Hence, rejecting expert views in favour of the EU in the pre-referendum Brexit debate was essentially about rejecting EU political rule including its elite use of expertise as an instrument of (political) authority; as ‘power over’ people.⁵

This collective volume focuses on a specific form of co-production, namely the co-production of EU expert and executive power. In this way, we aim to contribute to the discussion about the legitimacy of the exercise of EU executive power in an ever-growing policy field, namely in EU regulation of health and environmental risks.⁶ In other words, we focus on the relationship between EU executive power and regulatory science in decision-making on risk and technology. The term regulatory science, as coined by Sheila Jasanoff,⁷ refers to the particular use of scientific advice in regulation, and should be differentiated from broader notions of research science.⁸ Furthermore, we are not putting forward a particular ontological agenda regarding science or knowledge in general—rather, we focus on the political use of the ‘claim to know’ in the context of EU risk regulation.

Co-production has been an important guiding theme for all contributors to this edited volume. As such we are heavily indebted to Sheila Jasanoff’s pioneering work on law, science and technology, which is why we have given her thoughts on the relevance of studying co-production in the EU a prominent place in this volume.⁹ And yet this volume goes beyond paying a tribute to a remarkable scholar. It aims, first, to gather a critical mass of EU scholars who are able to approach the study of EU risk regulation with the same breathtaking birds-eye view as Jasanoff. And second, the ultimate goal is to explicitly re-connect the seemingly narrow discussions about the role of expertise in EU risk regulation with the broader conversation about EU executive power and its legitimacy.

In this chapter we introduce the general pinpoints of this conversation. First, we revisit the relationship between risk, regulation and executive power in the EU. Second we focus on policy-relevant expertise in the EU, its scope and relevance. Third, we link the previous two sections by introducing the notion of co-production, and fourth we present our findings on the way in which expert and executive power are being co-produced in EU risk regulation. Finally, we

⁴ We do not claim that the experts Gove was referring to were EU experts, but his remark did not distinguish independently produced expert claims from those produced within EU institutions.

⁵ S Quack, ‘Expertise and Authority in Transnational Governance’ in R Cotterell and M Del Mar (eds), *Authority in Transnational Legal Theory* (Cheltenham, Edward Elgar, 2016) with further references.

⁶ A de Ruijter, *The Expansion of EU Power in the Field of Human Health* (Oxford, Oxford University Press, 2017 forthcoming); M Weimer, *Risk Regulation in the Internal Market and its Limits—Lessons from Agricultural Biotechnology* (Oxford, Oxford University Press, 2017 forthcoming).

⁷ See Jasanoff, ch 2 in this volume.

⁸ See further on the differences between regulatory science and research science, S Jasanoff, *Science at the Bar* (Cambridge MA, Harvard University Press, 1995) and S Jasanoff, ‘Quality Control and Peer Review in Advisory Science’ in J Lentsch and P Weingart (eds), *The Politics of Scientific Advice. Institutional Design for Quality Assurance* (Cambridge, Cambridge University Press, 2011) 19–35.

⁹ See Jasanoff, ch 2 in this volume.

conclude by outlining a future research agenda that re-connects the study of EU risk regulation, expertise and executive power with the broader debates on the future of the EU constitutional order.

II. Risk Regulation and Executive Power in the EU

A fundamental principle of Western democratic societies is that essential political questions need to be decided by democratic constituencies represented through parliaments. In late-modern risk societies¹⁰ of the twenty-first century such essential political questions often relate to the distribution of economic, environmental and social risks; in other words to the distribution of the negative effects (the ‘bads’ rather than the ‘goods’) of globalisation, economic interdependence and technological progress. Yet, it is precisely in the face of these complex questions that parliaments and democratically elected politicians today seem to be losing their decision-making authority. Instead, technocrats and experts are increasingly called upon to solve pressing societal problems. For instance, the management of the economic and financial risks in post-crisis Europe has taken place through the empowerment of non-majoritarian institutions such as the European Central Bank and new EU regulatory agencies.¹¹ Such massive delegation of powers is legitimated by reference to the complexity of the societal questions at stake, as well as the need for specific professional and technical expertise to resolve them.¹²

Part and parcel of these developments is the rise of risk regulation. The latter is here understood as the body of EU rules and practices dedicated to the assessment, management and communication of potential risks arising from technological and economic developments. These rules and practices interfere with market and social processes in order to control and avert possible adverse consequences to publicly protected interests. Health and environmental protection is a key policy field in which the rise of risk regulation in the EU can be observed.¹³ Protecting EU citizens from health and environmental risks has been one of the main arguments, together with the need to ensure the functioning of the EU internal market,

¹⁰ U Beck, *Risk Society: Towards a New Modernity* (London, SAGE, 1992).

¹¹ See eg C Joerges and M Weimer, ‘A Crisis of Executive Managerialism in the European Union—No Alternative?’ in J Scott, G De Burca and C Kilpatrick (eds), *Critical Legal Perspectives on Global Governance* (Oxford, Hart Publishing, 2013) 295.

¹² See eg Case C-270/12 *Short Selling* at para 105.

¹³ G Majone, ‘The European Community between Social Policy and Social Regulation’ (1993) 31 *Journal of Common Market Studies* 153; G Majone, ‘The Credibility Crisis of Community Regulation’ (2000) 38 *Journal of Common Market Studies* 273; E Vos, ‘EU Food Safety Regulation in the Aftermath of the BSE Crisis’ (2000) 23 *Journal of Consumer Policy* 227; M van Asselt, M Everson and E Vos, *Trade, Health and the Environment: The European Union Put to the Test* (London/New York, Routledge/Earthscan, 2013).

used to justify the expansion of the EU regulatory state.¹⁴ Moreover, the legitimacy of massive re-regulation of the internal market at EU level relied since the very beginning on the claim to epistemic (output) legitimacy. In other words, it relied on the promise of scientifically sound and non-majoritarian expert-based regulation to tackle transboundary health and environmental problems so as to increase the welfare of EU citizens; and thereby to compensate for the shortcomings of a European welfare state and (input) democracy.¹⁵ Hence, as Hood et al point out:

[T]he two ideas of ‘risk society’ and ‘regulatory state’ could, indeed, be linked insofar as risk and safety is often held to be one of the major drivers of contemporary regulatory growth, for example in the development of EU regulation.¹⁶

Even more importantly, the expansion of the EU risk regulatory state has gone hand in hand with an empowerment of the EU executive,¹⁷ as the contributions to this volume vividly illustrate.¹⁸ The assessment and management of risks has been largely delegated to the executive institutions in the EU, particularly the European Commission¹⁹—a process intensified in the course of the 1990s through the rise of comitology committees and quasi-regulatory EU agencies.²⁰ While the Commission was originally conceived of as a technocratic body, it has gradually become ‘normalised’ as the EU’s political executive.²¹ As such, it tends to out-source specialised tasks to outside bodies and an elaborate network of agencies.

¹⁴ eg Art 114 (3) TFEU. G Majone, *The Rise of Statutory Regulation in Europe* (London, Routledge, 1996); G Majone, ‘The Regulatory State and Its Legitimacy Problems’ (1999) 22 *West European Politics* 1.

¹⁵ Initiated by the Commission’s Single Market programme and the transfer to qualified majority voting in EU legislation in the Single European Act. J Weiler, ‘The Transformation of Europe’ (1991) 100 *Yale Law Journal* 2403.

¹⁶ C Hood, H Rothstein and R Baldwin, *The Government of Risk: Understanding Risk Regulation Regimes* (Oxford, Oxford University Press, 2001) 4.

¹⁷ According to Curtin, the executive refers to individuals, ministers and civil servants that ‘control, from day to day, the state’s instruments of coercion, wealth and information.’ D Curtin, *Executive Power of the European Union, Law, Practices and the Living Constitution* (Oxford, Oxford University Press, 2009) 19. In this contribution we understand the EU executive as encompassing both the political and the administrative executive, but see both as being inherently interlocked, see also Curtin *ibid* at 66. We focus on the executive functions of the Commission and its satellite institutions while neglecting the executive role of the Council due to the special relevance of the former in the field of EU regulation of public health and environmental risks.

¹⁸ See Weimer and Pisani, ch 9, Stokes, ch 4, Ehnert, ch 5, Greer, ch 7, De Ruijter, ch 6, and Lee, ch 11 in this volume.

¹⁹ H Hofmann, ‘A European Regulatory Union—The Role of Agencies and Standards’ in P Koutrakos and J Snell (eds), *Research Handbook on the EU’s Internal Market* (Cheltenham, Edgar Elgar, 2016); M Egeberg, M Martens and J Trondal, ‘The EU’s Subordinated Agency Administration and the Rise of Executive Power at European Level’ in M Bauer and J Trondal (eds), *The Palgrave Handbook of the European Administrative System* (Basingstoke, Palgrave Macmillan, 2015).

²⁰ E Vos, ‘The Role of Comitology in European Governance’ in D Curtin and R Wessel (eds), *Good Governance and the European Union: Reflections on Concepts, Institutions and Substance* (Antwerp, Intersentia, 2005); D Curtin, ‘Delegation to EU Non-Majoritarian Agencies and Emerging Practices of Public Accountability’ in D Geradin and N Petit, *Regulation through Agencies in the EU: A New Paradigm of European Governance* (Cheltenham, Edward Elgar, 2005); M Busuioac, *European Agencies: Law and Practices of Accountability* (Oxford, Oxford University Press, 2013).

²¹ Curtin, above n 17, 91–100.

These ‘satellite’ institutions and their actors—policy advisors, evidence gatherers, risk assessors, deliberation networks—play a crucial role in the adoption of risk regulation.²² It is in this underbelly of EU regulation that the distinction between the executive and expertise becomes blurred,²³ and where we can find the ‘expert executive’ amalgam exercising power, albeit not always in a transparent way.²⁴

III. Policy-relevant Expertise in the EU, between Epistemic and Political Authority

The term expertise generally refers to ‘a widely acknowledged source of reliable knowledge, skill, or technique that is accorded status and authority by the peers of a person who holds it and accepted by members of the larger public.’²⁵ As outlined earlier, in this edited volume we focus on a particular type of expertise, namely regulatory or policy-relevant expertise, which is specialised (often scientific) knowledge that is used for regulatory purposes. We consider policy-relevant expertise to be a special type of ‘epistemic authority’.²⁶ Claims to epistemic authority are raised by virtue of, on the one hand, possessing specialised knowledge (ie expertise) that is different from other more commonly shared forms of knowledge and, on the other hand, being a reliable source of information (ie possessing credibility).²⁷ Policy-relevant expertise, however, stands out from other types of epistemic authorities (eg research science, epistemic communities, non-governmental organisations (NGOs)) in that it is being assigned authority by political institutions.²⁸ In that way, it gains *political* authority as its interpretations and factual assessments are validated by political decisions.

Hence, as Holger Strassheim discusses in this volume,²⁹ policy-relevant expertise is conceptualised as a nexus between political and epistemic authority. It is imbued with political authority. An important consequence of the rise of the EU risk regulatory state as described in the previous section has been an unprecedented

²² Busuioc, above n 20.

²³ Vos above n 20; E Vos, ‘The Rise of the Committees’ (1997) 3 *European Law Journal* 210.

²⁴ Curtin, above n 20; D Curtin and M Egeberg, ‘Tradition and Innovation: Europe’s Accumulated Executive Order’ (2008) 31 *West European Politics*; Egeberg, Martens and Trondal, above n 19; A Gornitzka and C Holst, ‘The Expert-Executive Nexus in the EU: An Introduction’ (2015) 3 *Politics and Governance* 1.

²⁵ F Fisher, *Democracy & Expertise. Reorienting Policy Inquiry* (Oxford, Oxford University Press, 2009) 17.

²⁶ Hence we use the term ‘regulatory science’ as the tool for providing policy-relevant expertise.

²⁷ R Guess, *History and Illusion in Politics* (Cambridge, Cambridge University Press, 2001) 38; Quack, above n 5; M Zürn, ‘Autorität und Legitimität in der postnationalen Konstellation’ (2012) 27 *Leviathan, Sonderheft* 41–62, at 51.

²⁸ Zürn, *ibid*, who calls it epistemic authority with assigned political authority (translation from German).

²⁹ Strassheim, ch 8 in this volume.

transformation of the EU's authority to validate policy-relevant knowledge claims, or what Strassheim refers to as the European 'ecosystem of expertise'.³⁰ To support its expanding governance structures, the EU has been continuously developing new EU-level institutions and procedures for the generation of policy-relevant expertise. This evolution is exemplified by mainly four trends.

First, since the 1990s the EU has been establishing ever more EU regulatory agencies (ie agencification) to which certain tasks of information gathering, coordination and expert advice were outsourced.³¹ Second, the European Commission has institutionalised an expansive system of expert groups advising it on a variety of policy issues.³² Third, the Better Regulation programme has been dominating the Commission's institutional policy since the beginning of the 2000s. As part of this programme the Commission's main instrument of 'knowing' in policymaking has become the Regulatory Impact Assessment (RIA) and the accompanying consultation of stakeholders.³³ More recently, the Commission has also introduced a new EU Science Advice Mechanism,³⁴ which is supposed to provide the Commission with independent scientific advice on specific policy issues.

Fourth, the general trend towards more centralised and institutionalised production of policy-relevant knowledge was augmented by the trend towards regulatory cooperation with third countries and hence the transnationalisation of expertise. Transatlantic trade and cooperation agreements, such as the EU-Canada Comprehensive Economic Trade Agreement (CETA) and the Transatlantic Trade and Investment Partnership (TTIP), require cooperation in the field of knowledge production, and to some extent the harmonisation of procedures in this respect.³⁵ The commitment of TTIP, for example, to RIAs and stakeholder consultations certainly fosters the consolidation of these procedures at EU level (and thereby also the consolidation of EU-level expert structures).³⁶

The increase of EU regulatory powers led to the emergence of knowledge infrastructures intended to secure the EU's claims to governance authority via

³⁰ *ibid.* The term has originally been coined by J Wilsdon, R Doubleday and J Hynard, 'Future Directions for Scientific Advice in Europe' in R Doubleday and J Wilsdon (eds), *Future Directions for Scientific Advice in Europe* (Cambridge, Centre for Science and Policy, 2015) 8–22.

³¹ S Krapohl, 'Risk Regulation in the EU between Interests and Expertise: The Case of BSE' (2003) 10 *Journal of European Public Policy* 189; Busuioc, above n 20; Curtin, above n 20.

³² Vos, above n 23; Vos, above n 20; G Chambers, 'The BSE Crisis and the European Parliament' in C Joerges and E Vos (eds), *EU Committees: Social Regulation, Law and Politics* (Oxford, Hart Publishing, 1999).

³³ A Meuwese, *Impact Assessment in EU Lawmaking* (The Hague, Kluwer Law International, 2008).

³⁴ Thereby replacing the post of the Chief Scientific Advisor previously held by Anne Glover.

³⁵ J Wiener and A Alemanno, 'The Future of International Regulatory Cooperation: TTIP as a Learning Process Toward a Global Policy Laboratory' (2015) 78 *Law and Contemporary Problems* 103.

³⁶ Commission, 'Better Regulation for Better Results—An EU Agenda' (Communication) COM (2015) 215 final; Commission, 'Better Regulation—Delivering Better Results for a stronger Union' (Communication) COM (2016) 615 final; See commentary in the Special Issue on the Better Regulation Package—'How much better is Better Regulation?' (2015) 6 (3) *European Journal of Risk Regulation* 344–81.

claims to EU epistemic authority.³⁷ The language of *risk* has been a crucial driver of this transformation: the building of the EU regulatory state—able to secure a free internal market while protecting citizens from market risks—necessitated an ever-complex institutional machinery of EU knowledge production. This transformation of EU expert authority has significant ramifications for both the vertical and the horizontal distribution of power in the Union. And yet it has gone almost unnoticed in EU constitutional debates. To be sure, the rise of EU executive power—the broad delegation of rule-making power to executive institutions at EU level—has been the subject of many constitutional preoccupations and critical analysis.³⁸ Yet the epistemic underpinnings of EU executive power remain largely in the shadows, and a niche subject in mainstream EU law scholarship.³⁹

In contrast, the above-described evolution of EU-level infrastructures of expertise has not gone unnoticed in policy and regulatory studies.⁴⁰ Yet here we often encounter arguments pertaining to so-called ‘objectivist epistemologies.’⁴¹ The policy analysis movement, and as its more recent manifestation, the evidence-based policy movement, are guided by the belief that sound science can provide regulation with certain evidence, which will lead to a more rational problem-solving process.⁴² This rational-instrumental model of evidence-based regulation⁴³ is rooted in the modernist paradigm, and understands science as culture-neutral, universalistic and objective. The underlying understanding of scientific expertise presupposes a linear separation between the processes of risk assessment and that of risk management, and between facts and values. In the words of Sheila Jasanoff:

On this traditional view, the task of evaluating the probability and severity of harm properly belongs with experts, who should work in settings as far removed from politics as possible in order to arrive at technical assessments unaffected by parochial interests or values. Only then can the door into political horse-trading open and political authority come into its play to determine which levels of risk are acceptable to concerned interest groups.⁴⁴

³⁷ See on the relationship between epistemic and governance authority in the transnational context see Quack, above n 5.

³⁸ Curtin, above n 17.

³⁹ With some notable exceptions, see for example C Joerges, ‘The Law’s Problems with the Governance of the Internal Market’ in C Joerges and R Dehousse (eds) *Good Governance in Europe’s Integrated Market* (Oxford, Oxford University Press, 2002) 3.

⁴⁰ This is reflected in the ‘knowledge turn’ in EU studies, see C Radaelli, ‘The Role of Knowledge in the Policy Process (1995) 2 (2) *Journal of European Public Policy* 159–83.

⁴¹ See H Strassheim, ‘Politics and Policy Expertise: Towards a Political Epistemology’ in F Fischer et al (eds), *Handbook of Critical Policy Studies* (Cheltenham, Edward Elgar, 2015) 319 at 322 who traces this term back to Majone.

⁴² See S Nutley et al, ‘Evidence and Policy in Six European countries: Diverse Approaches and Common Challenges’ (2010) 6 (2) *Evidence & Policy* 131–44; see for a discussion Strassheim, *ibid* 322.

⁴³ Others have referred to this model as technocratic, linear or deterministic model of risk regulation, see C Waterton and B Wynne, ‘Knowledge and Political Order in the European Environmental Agency’ in S Jasanoff (ed), *States of Knowledge The Co-production of Science and Social Order* (London, Routledge, 2004) 87; see also Fisher, ch 3 in this volume.

⁴⁴ See Jasanoff, ch 2 in this volume.

According to this model, epistemic authority and governance authority are not only neatly separated, but rely on fundamentally different legitimation resources. Scientific and expert claims are legitimised by scientific methodology and peer-review,⁴⁵ while political claims to authority are legitimised by political (democratic) and legal accountability.

A substantial body of interdisciplinary research into the practices of expert-based regulation, however, questions the traditional model, including the feasibility of the underlying separation between expertise and politics.⁴⁶ Recent empirical research shows that EU institutions (above all the Commission) use expertise not only for technocratic-instrumental, but also for political, purposes.⁴⁷ It shows, for example, that next to technocratic problem-solving, the Commission also uses expert groups to politically substantiate its pre-defined positions vis-à-vis other actors. Moreover, it uses them for political consensus-building to support negotiations among Member States.⁴⁸ Technocratic and political concerns are therefore intricately entwined in the formation of EU rules and standards.

This volume has emerged as a collective effort to de-construct the objectivist-instrumental model of expertise by critically studying the practices of evidence-based policy making, and thereby to support the call for political epistemologies. In the words of Strassheim:

[F]rom the perspective of political epistemologies ... evidence-based policy rests on political objectivity as a plausible fiction that tends to obscure many preliminary decisions that influence the production of numbers, indicators and standards. By uncovering the process of politicisation and de-politicisation entrenched in evidence-based practices, political epistemologies in contrast contribute to the capability of political communities to critically re-examining normative issues and to redefine problems that have been framed in ways so far unquestioned in public debates.⁴⁹

IV. Co-production as an Analytical Lens

Studying EU risk regulation through the lens of co-production allows us to uncover those entrenched practices as well as hidden exercises of political power

⁴⁵ M Hesselink, 'A European Legal Method? On European Private Law and Scientific Method' (2009) 15 *European Law Journal* 20.

⁴⁶ M van Asselt and E Vos, 'The Precautionary Principle and the Uncertainty Paradox' (2006) 9 *Journal of Risk Research* 313; E Vos and M Everson (eds), *Uncertain Risks Regulated* (London, Routledge-Cavendish, 2012).

⁴⁷ eg C Boswell, 'The Political Functions of Expert Knowledge: Knowledge and Legitimation in European Union Immigration Policy' (2008) 15 (4) *Journal of European Public Policy*; J Moodie, 'Resistant to Change? The European Commission and Expert Group Reform' (2016) 39 (2) *West European Politics*; J Metz, *The European Commission, Expert Groups and The Policy Process, Demystifying Technocratic Governance* (Basingstoke, Palgrave Macmillan, 2015).

⁴⁸ Metz, *ibid.*

⁴⁹ Strassheim, above n 41 at 323.

in the EU expert-executive space. But, first, we need to further clarify the meaning of the term co-production as used in this volume. To use Jasanoff's words, co-production as an analytical frame for research holds 'the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it.'⁵⁰ Humans create science and technology in the context of inherently biased and socially constructed institutions. Co-production can help explain stabilised understandings of the natural world ('how we know what we know') but it can also help us seeing the dynamics of how science begets meaning in the social, political or legal world and vice versa.⁵¹ In the context of the EU, the social and political construction of its political system hinges on the task to govern not only political subjects—Member States and EU citizens—but also subject matter itself. Risk regulation, as one of the core tasks of the EU, is there to benefit EU citizens. However, risk is often taken to be a self-standing natural occurrence and the determination of an existing risk as a matter of science unaffected by politics and values.⁵² The idiom of co-production challenges these neat divisions. It acknowledges that risks themselves are 'framed' and depend on 'social acceptance' for their recognition. Further, risk has become a determinant of social order. As Jasanoff rightly observes, risk does not merely 'act upon' society exogenously, but it arises from 'within social arrangements':

The portrayal of risk governance as merely a technocratic exercise designed to perfect the market overlooks the deeply political character of controlling risks. That political dimension comes clearly into view through the lens of co-production.⁵³

V. The Co-production of EU Expert and Executive Power

What does co-production tell us about the role of expertise in shaping the exercise of EU executive power and vice versa? Expertise in the EU is intrinsically linked to EU executive power by providing the latter with legitimacy and justification. This is an important finding of this volume: in the field of risk regulation, the EU seeks to transform claims to EU expertise (made within the institutionalised structures of EU expert advice, eg EU expert groups or agencies) into claims to EU executive authority (ie the claim that the EU executive, above all the Commission, should have the power to decide on certain issues potentially at the expense of other institutions or levels of governance). To refer once more to Jasanoff, 'centralisation and

⁵⁰ See Jasanoff, ch 2 in this volume.

⁵¹ Jasanoff (ed), above n 43; S Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States* (Princeton, Princeton University Press, 2005).

⁵² See Jasanoff, ch 2 in this volume.

⁵³ *ibid.*

presumed completeness of knowledge supply a firmer basis for credible displays of public reason and regulatory control.⁵⁴

The use of expertise including the ubiquitous reliance on science-based and evidence-based regulation is therefore not just an attempt to strengthen the rationality of EU risk regulation, but also and above all a way of justifying decisions on risk and technology including their legal and political consequences.⁵⁵ Given that a vast body of EU regulatory power is executive in nature,⁵⁶ the need for a technocratic expert-based justification is amplified. This can also be linked back to characterisations of the EU as an apolitical, non-majoritarian ‘regulatory state’⁵⁷ In other words, the call for expert-based regulation is deeply connected with the existential need to justify the exercise of executive power at EU level. In her contribution, Elizabeth Fisher states that: ‘It is not just the expertise of knowing about risks that is required in risk regulation, but what is also needed is expertise in how to govern those risks.’⁵⁸ In that sense, expertise is never just instrumental in the way that the EU Better Regulation discourse would like us to believe. ‘It is embedded in executive spaces and transforms executive power.’⁵⁹

At the same time, the contributions to this volume produce ample examples of transformations in both directions: not only expertise as transforming EU executive power, but also the latter transforming the nature of policy-relevant expertise. What they show are the non-linear relationships between, on the one hand, the production of science when it is embedded in the EU executive sphere, and on the other hand, the production of executive power through the embedding of knowledge as a policy-instrument in the socio-legal practices of the EU executive. As a result, expert ‘advisors’ and the EU executive inevitably merge into an amalgam of governing power.

Elen Stokes’ contribution offers a vivid example. Using EU regulation of synthetic biology as a case study, Stokes considers the ways in which expertise both contributes to and is determined by exercises of EU executive authority. The EU is currently contemplating what regulatory framework would be adequate to regulate this new technological development. Does the current EU regulatory regime on ‘conventional’ genetic modification cover synthetic biology, or is the latter so novel that it requires specially designed regulatory strategies and measures? This calls for attempts to define the very subject matter of EU regulation including

⁵⁴ *ibid.*

⁵⁵ See Weimer and Pisani, ch 9 in this volume.

⁵⁶ Curtin, above n 21. From the actor perspective: EU governance is dominated by the involvement of executive actors (even in instances in which legislative acts are being enacted), such as the Commission, the Council, and the European Council, comitology committees and EU agencies. From the perspective of acts: EU legislation usually only provides for broad framework norms, which require substantial implementation by executive actors. In EU risk regulation, the majority of legal acts are executive in nature (individual decisions, implementing and delegated acts or other forms of executive soft-law).

⁵⁷ Majone, ‘The Rise of Statutory Regulation in Europe’ above n 14.

⁵⁸ See Fisher, ch 3 in this volume.

⁵⁹ See Fisher, ch 3 in this volume.

the conceptualisation of synthetic biology as either novel or conventional genetic modification. Stokes reveals the phenomenon of ‘recombinant regulation’, whereby existing legislative measures recombine with newly emerging applications of technology. By defining synthetic biology as a conventional process that should fall under the existent regulation, the Commission, reliant on a technical expert group, de-politicises the technology. Neither legislative intervention nor a broader debate about the distribution of potential risks and benefits is needed. Moreover, the Commission is able to assert control over a new technology.

Treating synthetic biology as equivalent to genetic modification helps to maintain regulatory continuity and ‘normalise’ its novelty. ... But it also means that democratic deliberation on the broader ethical, legal and social impacts of synthetic biology is sidelined. ... Hence, regulatory stability in the present can come at a cost, in this case to the incorporation of multiple viewpoints and collective decisions about the future. ... Overall, then, the recombination of synthetic biology with legislation on ‘conventional’ GMOs provides an example of how new, emerging technological opportunities interact with existent legal and policy institutions and practices at EU level, and of how technical expertise and executive power are constituted and reaffirmed along the way.⁶⁰

The case study by Tanja Ehnert makes similar observations. Ehnert analyses the definition of the term ‘nanomaterial’ for the purposes of its regulation. Particularly it shows how, in order to address the uncertainty as regards to the actual knowledge of what can be described as ‘nanomaterial’, the executive took deliberate steps to shift the issue from the European Parliament to the European Commission. As a result the definition of nanomaterials became depoliticised and reframed as a mere technical, soft law issue. Following this, the definition of nanomaterials as carved out by the EU executive became the basis for hard law.

The role of the EU executive in defining the world of science and technology and its political uses is not limited to new and emerging fields of research. Policies that are highly interwoven with science—and represent a deep involvement of both political actors and scientific assessments—are shaped by the dominant strain of knowledge entrepreneurs within them. Experts engaged in executive rule-making are able to exert public authority. In the words of Strassheim:

To recognise the expertise of an individual or collective actor means to attribute to that actor both the competence to validate and justify knowledge claims (‘epistemic authority’) and the capability to make these knowledge claims relevant for collectively ordering and evaluating society (‘political authority’).⁶¹

The case studies by Scott Greer and Holger Strassheim both make this point. Strassheim’s case study on behavioural expertise analyses how European public health policy is recast as a science that can ‘nudge’ people into the right behaviour. ‘Smart-regulation’ through behavioural insights in EU public health and the environment is a key example of the ‘epistemic authority’ that is assigned political

⁶⁰ See Stokes, ch 4 in this volume.

⁶¹ See Strassheim, ch 8 in this volume.

authority. The behavioural economic insights are particularly attractive in the context of the EU executive. These insights are presented by its proponents as a solution for the lack of science-policy coordination. Indeed, Strassheim in his chapter shows how ‘the behavioural movement manages to be perceived as both scientifically reputable and politically attractive, capable of filling the institutional void in European policy making.’⁶² In the case of behavioural expertise, rather than using either science or the political and legal basis as a manner to persuade the public of the legitimacy of a policy, behavioural insights persuade on both those counts.

Another field of policy where the experts themselves have a key role in carving out the role for the EU executive is in the field of public health surveillance. As explained by Greer public health surveillance in itself has been developed as an ‘order-making concept’ that carves out an important space for the executive to exercise public authority:

Public health surveillance, the collection of public health data for public purposes, is at the core of public health and the modern state. It is invasive, expensive, sometimes coercive, justifies all sorts of public actions, and is fraught with all manner of conflicts about personal data, privacy, state power and public action. It is therefore political. Its political nature, however, is easier to deduce than to see in the everyday work, publications, and statements of people involved in an apparently low-profile, scientific, and cumulative public enterprise. In the center of a vortex of concerns about technology, privacy, disease, power, and liberty, we find an oddly calm world of writing about epidemiological best practice that has shaped, among other institutions, the developing European Union engagement in public health.⁶³

Greer shows how the EU’s adoption of a particular understanding of public health surveillance as both a science and a political tool legitimises far-reaching efforts of personal data gathering, and shapes public health as a EU policy field. The *de*-politicisation of health surveillance as a source of executive power in the field of public health, is amplified by the *re*-politicisation of public health when its expertise is merged with security expertise, particularly also when it comes to strengthening the role of the EU executive in public health emergencies, as analysed by de Ruijter.

Where Greer focuses on the concept of public health surveillance, the chapter by de Ruijter focuses on the empowerment of the EU executive through the securitisation of responses to public health emergencies. As Greer described, with regard to the field of public health surveillance, EU executive power was co-produced through the assumption of a scientific need for a harmonised understanding of public health surveillance. In contrast, De Ruijter shows that before the last decade the role of the EU executive for managing public health threats remained relatively minor. Yet in tandem with the rise of the risk society,⁶⁴ and especially after 9/11,

⁶² *ibid.*

⁶³ Greer, ch 7 in this volume.

⁶⁴ Beck, above n 10; U Beck, ‘The Terrorist Threat World Risk Society Revisited’ (2002) 19 *Theory, Culture & Society* 39.

the scientific understanding of the nature of health risks arising in emergency (public health) situations has changed. Other types of experts became involved, particularly those working in the area of security. As a result, current EU public health regulation in the field of communicable disease outbreaks, bioterrorism and chemical attacks has merged the scientific input of two very distinct types of expertise—public health experts on the one hand and security experts and economists on the other hand. While the former believe that public health risks are manageable and statistically foreseeable, the latter view such risks as unforeseeable disasters or catastrophes that should be addressed, not only in terms of health and life of humans, but also in terms of security, critical infrastructures and defence.

VI. Broadening the Debate—Rethinking EU Constitutionalism

As Elizabeth Fisher observes in this volume,⁶⁵ in recent years there has been a trend in both scholarly and policy discussions to downplay the broader political issues underlying EU risk regulation with the latter becoming ‘kettled’ into a separate discourse from the mainstream debates about the EU. As stated in the beginning, with this volume we aim to overcome this trend and to re-connect the risk regulatory discussion with the broader discussion on EU executive power and its legitimacy. The salience of expertise for the EU’s democratic governance more generally is well demonstrated by this quote from the chapter by Jasanoff:

The European Union emerges ... as an inversion of the standard paradigm of modern democratic governance. ... Supranational governing bodies such as the EU are less subject to elections or other forms of direct democratic control. For such bodies, the relationship of legitimation is reversed: instead of knowledge and experience serving purposes that the governed have placed on the political agenda, the EU governs by setting the policy agenda on the basis of claimed superior knowledge and expertise. Under these circumstances, the epistemic and social authority of science provide the strongest justification for acting on others’ behalf. Thus, in the context of EU risk governance, the perceived rightfulness of regulatory policies derives from advisory committee claims to know for the entire European polity. Risk governance is a site in which European institutions assert their right to govern all European lives—thereby constructing an imaginary of a united Europe—by generating persuasive technical rationales for centralised policy action.⁶⁶

These far-reaching shifts of power in the EU’s multi-level polity require a re-thinking of the legal and constitutional foundations of EU (risk) regulation. The main challenge of EU democratic governance (and transnational governance more generally) today is to ensure that the use (including the production) of expert

⁶⁵ See ch 3.

⁶⁶ Ch 2 in this volume.

knowledge in policymaking is able to safeguard the public interest. Debates on EU constitutionalism, however, have so far neglected this challenge. Epistemic authority largely remains a blind spot in EU constitutionalism debates.⁶⁷

There is currently no (EU) constitutional theory that can account for epistemic authority and expert power in our pluralist knowledge-based society. This volume supports the claim that expertise serves as ‘an alternate reservoir of power, not subject to the modes of legitimation that govern the legislative, executive or judicial branches of a classic, tripartite national government.’⁶⁸ We do not claim to deliver such a new constitutional theory, but we do hope to provide for some of its important building blocks. Recognising expertise as ‘an alternate reservoir of power’ means that we need to re-think traditional modes of legitimation of EU executive authority in order to be able to normatively evaluate, and perhaps even control this hidden exercise of power. This means re-thinking EU constitutionalism to ensure the expert-executive amalgam is oriented towards the public good. We need to develop concepts allowing holding EU executive power to account for its use of policy-relevant expertise including how it collects and ensures the quality of that expertise. Law and the study of expertise from a legal-constitutional perspective are relevant here in two respects.

First, the EU has been developing soft and hard meta-norms governing the use of expertise by EU institutions, and thereby implicitly acknowledging the significance (and perhaps even the politics) of epistemic authority. We can only briefly refer here to Commission guidelines, communications and white papers on expert consultation, founding regulations for EU agencies, EU legislation on access to documents, Commission Decisions establishing new bodies, such as the Regulatory Scrutiny Board overseeing the Commission’s work on RIAs. Moreover, EU courts are confronted on a daily basis with the legal review of science- and expert-based decision-making. While this presents an enormous challenge for the courts, they have been gradually developing procedural requirements and principles, which shall govern the exercise of epistemic authority in the EU.⁶⁹ Lastly, as illustrated by Maria Lee’s contribution, recently the European Ombudsman has produced a number of decisions directly relevant to co-production of epistemic and governance authority.⁷⁰ Can these developments be seen as beginning counter-movements to the traditional rational-instrumental understandings of the role of expertise in EU risk regulation? We believe that the ways in which law enhances or reduces the possibility of democratic destabilisation of regulatory knowledge demands further scrutiny. Law has the capacity to reveal or to further obscure both the contingency of regulatory choices about technological innovations and the possibility of societal change. This edited volume sheds light

⁶⁷ But see S Smismans, ‘Constitutionalising Expertise in the EU: Anchoring Knowledge in Democracy’ in J Priban (ed), *The Self-Constitution of Europe* (Farnham, Ashgate, 2016).

⁶⁸ Jasanoff, ch 2 in this volume.

⁶⁹ See Weimer and Pisani, ch 9, Anderson, ch 10, and Lee, ch 11, in this volume.

⁷⁰ See Lee, ch 11 in this volume.

on the many ways in which EU law could contribute to either entrenching the technocratic model of risk regulation or to destabilising it thereby facilitating incremental legal and regulatory change.

Second, these developments are not in the spotlight of legal academic interest as they take place in the technical underworld of EU executive governance. Yet, as this volume shows, EU constitutional discourse on co-production provides for a critical lens through which to evaluate the quality of the above-described EU meta-norms on the use of expertise in policy making. How shall we judge the quality of such meta-norms in constitutional terms? In the absence of a constitutional theory as benchmark, the risk is that they simply create a legitimating discourse for functional governance captured by special interests.⁷¹

Finally, the dominant EU discourse on multi-level (pluralist) constitutionalism has focused on the interaction between the EU and national legal orders, as well as on issues of subsidiarity and national diversity defined along territorial lines. At the same time, the centralisation of epistemic authority (and hence the lack of *epistemic* subsidiarity)⁷² in the EU has been neglected. Yet legal and political multi-level conflicts in the EU are increasingly resolved by recourse to expert claims. Hence, what is won in terms of (de-centralised) governance authority can again be lost in terms of (centralised) epistemic authority. The task ahead is to advance a research agenda for studying EU rules and practices of co-production from a constitutional perspective. This would allow us to ‘theorise more completely the role of science in relation to other institutional means of legitimating governmental power.’⁷³ Pursuing this research agenda will help re-imagining EU constitutionalism taking into account the co-production of EU epistemic and governance authority; and thereby help preserving the core function of constitutionalism, namely to shape the domain of politics in the public interest.⁷⁴

⁷¹ Above n 65.

⁷² See on this term S Jasanoff, ‘Epistemic Subsidiarity—Co-existence, Cosmopolitanism, Constitutionalism (2013) 4 (2) *European Journal of Risk Regulation* 133–41.

⁷³ See Jasanoff, ch 2 in this volume.

⁷⁴ Above n 65.

Part 1

Theoretical Perspectives

2

Constitutions of Modernity: Science, Risk and Governable Subjects

SHEILA JASANOFF

I. Two Faces of Risk Governance

Risk regulation in the European Union (EU) brings together two concepts that were historically thought to operate independently of one another: risk and the EU. Conventionally, risk is believed to lodge in the universe of what the philosopher Ian Hacking calls ‘natural kinds’,¹ that is, categories of things that exist in nature, apart from and distinguishable from human purposes. It is defined as the magnitude of an expected harm (disease, disability, death) times the probability of that harm (one in a hundred, thousand or million).² Both numbers are taken to reflect natural realities, ascertainable in principle by objective, scientific methods. Benzene, for example, causes aplastic anaemia and leukaemia in a fraction of people who are exposed at concentrations above some definable amount: this is considered a scientifically demonstrable fact, independent of the exposed person’s social and cultural affiliations,³ let alone the political preferences of the authorities who manage people’s exposures. Benzene on this view is a physical agent with properties that are not affected by values or politics. Similar observations could be made about most threats to human health, safety and the environment that have given rise to regulatory concern.

The EU, on the other hand, is a political formation through and through, a coordinator of Member States, called a superstate by some and an unidentified

¹ I Hacking, ‘A Tradition of Natural Kinds’ (1991) 61 (1/2) *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 109–26.

² R Snyder, ‘Leukemia and Benzene’ (2012) 9 (8) *International Journal of Environmental Research and Public Health* 2875–93.

³ Epidemiologists recognise, of course, that individual biological variability may affect the degree to which a specific human body responds to a particular form of hazard. Nevertheless, for regulatory purposes, inter-individual variability is not normally factored into the construction of a dose-response curve for a given population. Classes of at risk subjects may, however, be isolated for analysis, such as specially vulnerable populations or occupational subgroups exposed to different doses of a hazardous agent at work.

political object by others, but composed of its own ruling institutions such as an executive, a parliament and a court. It is a social construct, made out of agreements and rules, norms and practices that depend on human actors to interpret and enact them. The role of this political union, like that of democratic nation states, is to govern human conduct for the benefit of the governed, with their duly expressed consent. Unlike nation states, however, the EU is led mostly by unelected officials, and its work has been plagued for many years by charges of a democratic deficit. If any proof were needed of the EU's precarious political standing, and its need for continual re-legitimation by the European people, the crises of the last several years, culminating in Britain's referendum of 23 June 2016 to leave the EU after 40 years of membership, offered to many observers definitive affirmation.

This conventional way of characterising risk and the EU, holding the former to be natural and the latter to be political, suggests that controlling risk in the EU should consist of two fundamentally non-intersecting tasks: on the one hand, *subject-matter governance* rationalised by appeals to scientific facts; on the other, the *governance of political subjects* legitimated through appeals to democracy. EU institutions are authorised to regulate risks for the benefit of the European population, but risks themselves, as products of physical and material conditions, arise apart from the will of politicians or policy experts in Brussels or Strasbourg. On this traditional view, the task of evaluating the probability and severity of harm properly belongs with experts, who should work in settings as far removed from politics as possible in order to arrive at technical assessments unaffected by parochial interests or values. Only then can the door into political horse-trading open and political authority come into play to determine which levels of risk are acceptable to concerned interest groups. For EU policy makers, this way of thinking underlies the judgment that—in fields where regulation is fully harmonised—the technical assessment of risk, viewed as fundamentally scientific, should be conducted at the European level, where experts can make technical findings for the entire European populace, while leaving room for variation in Member States' policy responses under the principle of subsidiarity.

Decades of research on the practices of risk regulation have significantly complicated this picture of a strict and workable separation between science and politics.⁴ The division between kinds in nature and kinds of political response does not hold up so neatly when risk departs from the safe havens of mathematical calculation and becomes a subject of concern for the regulatory state. First, the kinds of risks that states are entrusted to manage only become palpable, indeed measurable, because of prior collective understandings that have designated some harms as worth worrying about and some causes as important to control. This process of selective acknowledgement is known as framing. Not every framing of risk receives equal policy attention, and introducing a new or different framing

⁴ For an account of the work done by expert advisory bodies to construct and naturalise perceived boundaries between science and politics, see S Jasanoff, *The Fifth Branch: Science Advisers as Policymakers* (Cambridge MA, Harvard University Press, 1990).

of an issue into national or transnational agendas of decision making is itself an exercise of power. Out of the welter of things that might arouse collective concern, only some are picked out as deserving of care and attention. Workplace exposure to a hazard like benzene is but one familiar example of such agenda setting, attesting to modern industrial societies' particular worries about cancer and possibly also to the strength of their labour movements. Only when a case arrives on the policy agenda is science called upon to distil causes from mere speculative correlations. Science's fact-finding then defines the precise targets for regulatory intervention—either to mitigate harm that is already occurring or to prevent new, foreseeable injuries to communal well-being—but the threshold choice of which problems policy makers should worry about remains fundamentally social and political.

Second, the technical assessment of risk is tied at all points to value-laden choices about how to treat uncertainty. Historically, the legitimacy of nation states depended on their ability to identify and control threats to life and property before their subjects suffered serious harm.⁵ In late modernity, however, governments confront new challenges occasioned by changes in the nature of population-wide risks. In place of familiar and recurrent hazards, like flash floods, automobile accidents or heart attacks that could be measured and mapped through statistics,⁶ humanity now faces a host of diffuse, interlocking and synergistic hazards whose combined effects cannot easily be foreseen even with the aid of sophisticated, computerised modelling technologies. Nor can many manifest harms—a child's cancer, a virulent disease outbreak or an unexpectedly severe storm—be traced back with certainty to definite causes, such as exposure to waterborne chemicals,⁷ a new virus,⁸ or the changing climate. Indeed, even climate change, today's arch-example of a scientifically demonstrated, catastrophic threat to humanity, cannot be pinned down with respect to the specific times, locations, severity or distribution of its consequences. And the 'world risk society', so dubbed by the late sociologist Ulrich Beck, faces dangers that are even less determinate than climate change—such as rising antimicrobial resistance, global pandemics, devastating crop failures, and crashes of global financial markets.⁹ Further, the spread of terrorist networks and cybercrime signals that all-too-knowing human agents can take advantage of weak links in modern institutions of knowledge and power to strike people in places—subways, airports, cafés, buses, beach promenades and

⁵ M Foucault, *Discipline and Punish* (New York, Vintage, 1979).

⁶ Foucault referred to this statistically driven mode of governance as the *dispositif* (or apparatus) of security, through which states characterise and control probable events. See M Foucault, *Security, Territory, Population: Lectures at the Collège de France 1977–1978* (trans G Burchell, Paris, Gallimard, 2004) 4–5.

⁷ See, for example, the protracted and inconclusive litigation arising from children's leukaemia cases in Woburn, Massachusetts in the 1980s. J Harr, *A Civil Action* (New York, Random House, 1995).

⁸ The Zika outbreak of 2016 is an illustrative case. It is known to be transmitted by the yellow fever mosquito, but how infection spreads and who will suffer irreparable health damage remain mysterious.

⁹ U Beck, *World at Risk* (Cambridge, Polity, 2007).

Internet sites—where they had previously felt safe. In this respect, the promise of total control built into many of modernity's most advanced technological systems becomes itself an invitation to subversion, producing yet another frontier of risk.

Third, neither society nor its perceptions hold still in the face of acknowledged concerns. Much has been written in the sociological literature about the implications of the contemporary era of risk for the structure, functioning and self-understanding of modern societies. Beck's early observation that risk, overriding race, class and other factors of social stratification, has become a pervasive determinant of social order, struck a deep chord,¹⁰ and an entire academic superstructure has risen since then to explore its implications.¹¹ Beck himself saw the global reordering of risk society as good reason to move away from a focus on the nation state as the primary unit of social science analysis, and he urged recognition for cosmopolitanism as a phenomenon, a normative project and a research methodology. In the resulting body of work, society continually, and reflexively, remakes itself in the light of half-seen, incompletely understood, intangible, but ubiquitous threats, prompting new forms of social solidarity as well as instability. But powerful as these observations are, the very designation 'risk society' continues to treat risk as something exogenous, acting *upon* society rather than arising organically from and within social arrangements. In its focus on certain well-defined risks such as chemicals, nuclear power and climate change, the risk society literature does not fully take on board the insights from constructivist studies of risk showing that the things society worries about evolve at one and the same time as society itself. Faced with this ongoing double shift in understandings of both nature and society, risk governance becomes not so much a matter of keeping bad (if poorly understood) things under control as a more complex exercise in world-making, in the particular form that I term co-production.¹²

II. Risk and European Integration: A Co-productionist View

On its face, risk governance conforms very well to the traditional model of European integration that views the market as the main instrument of integration and the standardisation of commodities in that market as merely the epiphenomenon that

¹⁰ U Beck, *Risk Society: Towards a New Modernity* (London, Sage Publications, 1992).

¹¹ See, for example, U Beck, A Giddens and S Lash, *Reflexive Modernization* (London, Polity, 1994); S Lash, B Szerszynski, and B Wynne (eds), *Risk, Environment and Modernity: Towards a New Ecology* (London, Sage Publications, 2000); B Adam, U Beck, J Van Loon (eds), *The Risk Society and Beyond: Critical Issues for Social Theory* (London, Sage, 2000).

¹² S Jasanoff (ed), *States of Knowledge: The Co-Production of Science and Social Order* (London, Routledge, 2004) 15–45.

enables the market to function. Integration, after all, could scarcely be meaningful if the market posed unacceptable risks to the people the EU represents. But this portrayal of risk governance as merely a technocratic exercise designed to perfect the market overlooks the deeply political character of controlling risks. That political dimension comes clearly into view through the lens of co-production.

Co-production, as that concept has developed in science and technology studies (STS), is defined as

shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it. Knowledge and its material embodiments are at once products of social work and constitutive of forms of social life; society cannot function without knowledge any more than knowledge can exist without appropriate social supports.¹³

This deep entanglement of knowledge, materiality and norms is most apparent in moments when a given social order changes perceptibly, either through competition between clashing visions of the world or through entirely new arrangements coming into view. Co-production, in short, can be observed most clearly at times of emergence, contestation, standardisation, and importation of ideas from one source into other contexts. In any of these transitional phases, the co-produced settlements—what one might call the ‘new natural’—get built into core elements of social order: most importantly, representations, institutions, discourses and identities. Risk governance, often involving the recognition of emergent hazards and new modes of dealing with them, has proved to be a rich site for observing processes of co-production unfolding.

As avid students and occasional critics of modernity, STS scholars have paid particular attention to the moments in which promises of expert competence and control are constructed and made to appear persuasive in the context of risk governance. That preference is consistent with Bruno Latour’s influential claim that modernity can best be understood as a stage of human development in which the products of science (the facts of nature) are carved out from their social matrix and turned into stand-alone representations of reality.¹⁴ Even STS scholars fall victim to that most basic form of modern boundary work in choosing technoscientific products, claims or contestations as their favoured sites of analysis. Yet, no account of societal encounters with risk would be complete unless a focus on the production of technical claims is balanced by a symmetrical and correspondingly detailed account of how law, humanity’s other great ordering instrument, works along with science to delineate grounds for political response that appear morally rightful as well as epistemically right. Central to the analytic project of co-production is the observation that the two most widely recognised forms of lawfulness—scientific and legal—work together, even in partitioning the hybrid

¹³ *ibid.*, 2–3.

¹⁴ B Latour, *We Have Never Been Modern* (Cambridge MA, Harvard University Press, 1993).