Beyond neoliberalism: resilience, the new art of governing complexity

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Resilience, as a framework informing governance, relies on an ontology of emergent complexity. This article analyses how complexity operates not only as a critique of liberal modes of 'top-down' governing but also to inform and instantiate resilience as a postmodern form of governance. In so doing, resilience approaches develop upon and transform neoliberal conceptions of complex life as a limit to liberal governance and directly critique the policy frameworks of 'actually existing neoliberalism', which seeks to govern complexity 'from below'. While actually existing neoliberalism focuses governmental regimes on the 'knowledge gaps' seen as the preconditions for successful policy outcomes, resilience asserts a flatter ontology of interactive emergence where the knowledge which needs to be acquired can only be gained through self-reflexive approaches. This distinction will be illustrated by drawing upon recent UK government policy practices and debates.

Keywords: neoliberalism; resilience; complexity; National Adaptation Programme; governmentality

Introduction

Brian Walker and David Salt argue, in the preface to their influential book *Resilience Thinking*: 'We live in a complex world. Anyone with a stake in managing some aspect of that world will benefit from a richer understanding of resilience and its implications.'[1] In this starting assumption, they reflect the growing awareness that there is an intimate connection between living in a world of complexity and the perceived relevance of resilience-thinking for informing how we might govern this complex world.[2] To analyse the demand for resilience-thinking as a potential answer or solution, it is therefore vital to grasp what is already implied in the question of the ontology of the world, or life itself, as 'complex'.

This article seeks thereby to analyse the assumption that emergent complexity – or life as the object of governance conceived as complex – necessarily calls forth a new 'resilience' agenda of governance. It seeks to unpack the nature of that 'life' which is seen to evade liberal forms of representation and of government and to dictate new forms of governing. The following sections clarify the ontology of emergent complex life emphasising that, while it is

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[1] Brian Walker and David Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Washington, DC: Island Press, 2006), xiv.
[2] As Andreas Duit, Victor Galaz, Katarina Eckerberg and Jonas Ebbesson note, complexity ontologies challenge liberal modernist social sciences and the governing rationalities they are based upon:

> . . . as research methods in social science, almost regardless of underlying epistemologies, have to a large extent been based on a linear and static ontology. By and large, there has been a strong tendency within mainstream social science to view the world as governed by linear and probabilistic relationships that are, in principle, knowable through analytical techniques based on the principles of methodological individualism and aiming at reducing variation in empirical data to uncover regularities and correlational patterns. "Introduction: Governance, Complexity, and Resilience," *Global Environmental Change* 20, no. 3 (2010): 363–8.

understood in precisely the relational terminology immune to liberal reductionist and linear understandings, complex life is also understood to demand governance through other – nonlinear and non-reductionist – approaches. Complex emergent life is governable but on a very different basis to liberal and neoliberal 'life'.

The awareness of complex life, its limits and possibilities, has been driven through rethinking governance in terms of the perceived crisis of 'actually existing neoliberalism'.[3] These approaches challenged liberal modernist 'top-down' understandings of government and sought to govern from the 'bottom-up'. Neoliberal policy practices evolved into highly regulatory and interventionist regimes, seemingly at odds with neoliberalism 'in theory'. Resilience-thinking, it will be argued, is a radical critique of the knowledge claims of actually existing neoliberalism, suggesting that the hierarchical causal structure and assumptions of socially determined interactive outcomes still clings too much to a liberal modernist ontology.

The emergence of complexity

Life began to be conceived as complex, both in the natural and social sciences, in the 1920s – after the shock to liberal modernist confidence in progress caused by the carnage of the First World War (1914–1918) and the fears unleashed by the Bolshevik Revolution of 1917. Complexity theorists often locate this shift less in cultural and political sensitivities than in scientific discoveries such as Werner Heisenberg's discovery of the 'uncertainty principle' in quantum mechanics in 1927 – where at the quantum level of tiny particles it was impossible to measure both mass and momentum simultaneously, making access to full information impossible and thereby undermining the predictive promise of science.[4] Since the 1920s, classical mechanical understandings have increasingly given way to emphasis on the growth of 'uncertainty': the theorisation of the limits to understanding processes of interaction in order to predict outcomes.

Prior to the recent influence of complexity-thinking on the social sciences, the extension of the logic of Heisenberg's 'uncertainty principle' – chaos theory – was the most widely cited scientific theory of the limits of knowledge. In 1987, James Gleick's *Chaos: Making a New Science*, became a bestseller, introducing the general principles of chaos theory as well as its history to the broader public.[5] Essentially, the fact that it was impossible to accurately measure, at the same time, the position, mass and momentum of particles was, over the long-term, held to lead to unpredictable variations in outcomes. Chaos theory thus emphasised the importance of sensitivity to initial conditions which meant that tiny, unobservable, differences could – over repeated iterations – have major effects in the long term. Simple or closed systems of complexity theory shared this ontology but were distinct in that order rather than entropy emerged from a dissipative system over many reiterations of simple processes of interconnection.[6]

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[3] 'Actually existing neoliberalism' – following Neil Brenner and Nik Theodore, "Cities and the Geographies of 'Actually Existing Liberalism'," *Antipode* 34, no. 3 (2002): 349–79 – is increasingly understood as a highly interventionist and regulatory set of practices, which flag up a discrepancy between neoliberalism in theory and neoliberalism as a set of diverse policy practices.

[4] Melanie Mitchell, *Complexity: A Guided Tour* (Oxford: Oxford University Press, 2009) and Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos: Man's New Dialogue with Nature* (New York: Bantam, 1984).

[5] James Gleick, *Chaos: Making a New Science* (London: Vintage, 1998).

[6] As noted by Norman Farmer and J. Doyne Packard, complexity theory for this reason is the 'related opposite' of chaos theory; cited in Mitchel Resnick, *Turtles, Termites, and Traffic Jams: Explorations in Massively Parallel Microworlds* (Cambridge, MA: MIT Press, 1999), 14.

Both worked on the epistemological level, emphasising the impossibility of knowing interactive processes of multiple determinations, which undermined universal linear assumptions. Thus, simple complexity, within a closed system, can be understood to produce order through self-organisation on the basis of interactive processes (analogous to first generation systems theory, for example, in the work of Niklas Luhmann, the work on non-ergodic systems of new economic institutionalist Douglass North or the assemblage theory of Manuel DeLanda).[7] Linear or reductionist approaches therefore were rejected on the basis that they failed to grasp that which was crucial to understanding the chain of causation: interaction.[8] Nevertheless, the apparent randomness – caused by tiny variations in initial conditions – could still be understood as driven by an underlying mechanical conception of a law-bound world.

While chaos theory and deterministic understandings of complexity pose an epistemological critique of the ability to grasp the world on the basis of law-bound determinism, emergent or general complexity approaches promise a radically different ontology of objective unknowability beyond merely epistemic limits. Systems of general or emergent complexity are not observable from the outside as a deterministic or autopoietic closed system is. The interaction between emergent complex life and governing intervention is held to be open and therefore full of immanent possibilities.[9] The implications of this shift were already recognised and highlighted by Jean-François Lyotard in the late 1970s.

In Lyotard's understanding, for complicated deterministic or closed systems of interaction, it is *de facto* impossible to have a complete definition of the initial state of a system (or all the independent variables) because of the resources this would take up. It would be analogous to an emperor wishing to have a perfectly accurate map of the empire, making the entire country devote its energy to cartography and therefore leading it to economic ruin because there are no resources for anything else.[10] However,

> . . . this limitation only calls into question the practicability of exact knowledge and the power that would result from it. They remain possible in theory. Classical determinism continues to work within the framework of the unreachable – but conceivable – limit of the total knowledge of a system . . . Quantum theory and microphysics require a far more radical revision of the idea of a continuous and predictable path. The quest for precision is not limited by its cost, but by the very nature of matter.[11]

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[7] Niklas Luhmann, *Social Systems* (Palo Alto, CA: Stanford University Press, 1995); Douglass C. North, "Dealing with a Non-Ergodic World: Institutional Economics, Property Rights, and the Global Environment," *Duke Environmental Law & Policy Forum* 10, no. 1 (1999): 1–12; and Manuel DeLanda, *A New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum, 2006).

[8] Alvin Toffler, 'Foreword: Science and Change', in *Order Out of Chaos*, eds. Ilya Prigogine and Isabelle Stengers (New York: Bantam, 1984), xi–xxvi and Paul Cilliers, *Complexity and Postmodernism: Understanding Complex Systems* (Abingdon: Routledge, 1998), viii–ix.

[9] In a closed system of complexity, the outcome of external policy intervention would be determined by the inner interactions of the system or assemblage intervened in and thereby have nonlinear outcomes (dependent upon the internal nature of the system intervened into not upon the external intervention itself). In an open system of complex interaction, governance cannot 'intervene' from the outside but is already embedded within the problematic and therefore works in a constant process of self-reflexivity rather than assuming an external subject position or instrumental means-ends causality. See, for example, the treatment in David Byrne and Gill Callaghan, *Complexity Theory and the Social Sciences: The State of the Art* (Abingdon: Routledge, 2014) 86–106.

[10] Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Manchester: Manchester University Press, 1984), 55.

[11] Ibid., 56.

It is important to emphasise the distinction between the deterministic ontology of nonlinear outcomes in simple complexity and the understanding of emergent causality of general complexity theory. Calculation or control and direction become impossible in general complexity theory, but the unknowable is not a result of hidden determinism (as in simple complexity), nor can it be the result of blind chance or luck. Lyotard insightfully flagged up how an emergent complexity approach transformed the ontology of knowledge and unknowability and its implications for modernist subject/object distinctions. In a liberal episteme, there is the necessary assumption of hidden determination – as Einstein argued, it was impossible that 'God plays with dice' – problems of knowledge are epistemological, merely a matter of knowing more, in order to reveal the causal interconnections. In general complexity theory – where statistical regularities (orders) occur without 'the supreme Determinant' – nature or life reveals itself as an emergent power, neither determined nor merely arbitrary:

> If God played bridge, then the level of 'primary chance' encountered by science could no longer be imputed to the indifference of the die toward which face is up, but would have to be attributed to cunning – in other words, to a choice, itself left up to chance, between a number of possible, pure strategies.[12]

The problematic of a complex emergent order is not that of knowing more, 'filling in the gaps' of knowledge, but an ontological problem, i.e. the problem exists at the level of what is to be known (it is not linear and law-bound) rather than at the level of how we might know the underlying reality.

In this way, three epistemes of knowledge and unknowability emerge in terms of governmental reasoning, which can be heuristically drawn out in the idiom famously used by Donald Rumsfeld, when serving as US Secretary of Defense in 2002.[13] The first, modernist or liberal, episteme understands the 'known knowns' as central to governmental reason, based on linear and universal assumptions of the progressive accumulation of knowledge of laws and regularities of human affairs. The second, neoliberal, episteme regards these 'known knowns' to be less important, resulting in merely artificial and potentially counterproductive assumptions that ignore the interactive complexity of life. Where policy outcomes depend more on the inner deterministic causal relations of the object being governed, these knowledge gaps are revealed and necessitate a greater sociological or anthropological awareness of social interaction to enable more effective policy interventions. These crucial knowledge gaps are therefore the 'known unknowns', the hidden, underlying, processes of determination, which we know we do not fully know. For resilience approaches, working on the basis of emergent causality or general complexity, there is no deterministic understanding of 'known unknowns' operating underneath or at a deeper level of causation. In the more open interactive ontology of resilience, it is the 'unknown unknowns' that have the central role in emergent causation meaning that contingent outcomes only reveal concrete causality after the event and are impossible to know beforehand.

Thus, three regimes of governance emerge, each premised upon a different means of operationalising 'life' as a technology of governance. Complexity theory itself provides a

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[12] Ibid., 57.
[13] US Department of Defense, "News Briefing," http://www.defense.gov/transcripts/transcript.aspx?transcriptid=2636 (accessed February 12, 2002).

> ... there are known knowns; there are things we know that we know. There are known unknowns; that is to say, there are things that we now know we don't know. But there are also unknown unknowns – there are things we do not know we don't know.

conceptual field in which nonlinear causality (the breakdown of modernist linear cause-and-effect assumptions) can be understood to operate at either an epistemological or at a deeper ontological level.[14] At the most simple level, the object of governance can be understood as shaped through determinate but complex causality – often articulated in terms of cultural evolution, endogenous processes of inter-subjective understanding or socio-economic path-dependencies – which then pose a problem for governing policy intervention into these processes. In this deterministic understanding of complexity, there is still a division between the subject (the governing actor) and the object (now understood as complex). There is still a liberal subject external to the problematic – much like a scientist observing complexity in eco-systems or a liberal observer considering how to intervene in a complex social order.

In a more extended understanding of complexity, this divide between subject and object is elided through understanding that the governing/knowing subject is not external to the problematic but always and already 'entangled' or embedded in this relationship. With the crisis of modernist framings, emergent or general complexity thus appears to be the leading contender as an alternative ontological vision of the world – of how life can be alternatively conceived as the object of governance. In this sense, general complexity approaches could be seen as reinforcing the new materialist 'ontological turn' in the social sciences,[15] which highlights how a complex ontology constitutes radical possibilities foreclosed by liberal forms of governance.

Complexity-thinking in the social sciences could thus be understood as on a continuum between a problematic of complexity for policy intervention with instrumental governance goals and complexity understandings which would dispute the possibility of such a subject/object separation. The two ends of this continuum will be heuristically framed in terms of the governing rationalities of actually existing neoliberalism (as a set of regulatory policy practices where the object of intervention is constructed in terms of complexity) and resilience-thinking (where governance is no longer a matter of intervening in an external problematic but of self-reflexive understandings of entanglement).

The market as the *deus ex machina*?

Resilience-thinking is thereby not novel in pitting complex life against the artifice of human social construction. As Foucault states, all liberal forms of governing require the articulation of internal limits to rule as part of the process of reflective self-knowledge of what it means to govern – the construction of life as (un)governable in different ways is inseparable therefore from a study of what it means to govern in a liberal way.[16] What is distinct about resilience is that complex life is no longer seen as merely constituting the limit to the world of governmental reason, but instantiates the 'unknown unknowns' as the

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[14] Byrne and Callaghan, *Complexity Theory and the Social Sciences*, associate simple deterministic complexity approaches with neoliberal forms of governmentality but argue that emergent general complexity approaches provide the possibility for new and more progressive social scientific understandings.

[15] See for example, William E. Connolly, *The Fragility of Things: Self-Organizing Processes, Neoliberal Fantasies, and Democratic Activism* (London: Duke University Press, 2013); Diana Coole and Samantha Frost eds, *New Materialisms: Ontology, Agency and Politics* (London: Duke University Press, 2010); and Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (London: Duke University Press, 2010).

[16] Michel Foucault, *The Birth of Biopolitics: Lectures at the Collège de France 1978–1979* (Basingstoke: Palgrave, 2008), 10–22.

basis of governmental reason itself. This only became possible through a number of transformations and inversions in liberal reasoning, particularly in relation to the key sphere through which limits were internalised or brought into governmental reason: that of political economy, held to produce its own parallel mechanisms of 'truth' as a limit to those generated by liberal governmental reason.[17]

Thereby resilience-thinking, which posits an ontology of general or emergent complexity, can be seen as a distinctive third governmental episteme and contrasted with liberal and neoliberal ways of conceiving life as complex. This way of grasping complex life as an object of governance and integrating complexity into governmental reasoning depended upon neoliberalism as a prior way of bringing complexity into governmental reasoning, rather than upon excluding complexity and assuming universal rational and linear modes of reasoning. It is thereby only on the basis of understanding neoliberalism as a mode of governing that the distinctive mode of governing through resilience approaches to complexity can be fully drawn out.[18]

Empirically, the rise of complexity theorising in the social sciences, especially in political economy, can be seen as a ideological response to the extensions of state intervention from the 'top-down' in order to deal with the economic and social crisis of the inter-war period, the New Deal in the USA, Keynesianism in the UK and, of course, the totalising Stalinist and Nazi regimes that came to power in Russia and Germany.[19] Neoliberalism as a response, cohered theoretically in the post-war period, suggested that top-down interference could only lead to the erosion of liberal freedoms and that active governance interventions necessarily had to work on the basis of 'bottom-up' understandings that worked on the pre-conditions necessary for effective market and democratic systems. States needed to actively govern 'for' the market, not 'against' or 'over' market outcomes, facilitating and enabling outcomes from below rather than directing and controlling from above.

Neoliberal thought therefore argued that the knowledge necessary for policy interventions in complex life was not of the type acquired under the modernist social sciences with their assumptions of universal regularities of cause and effect. Essentially, rather than separating the realms of governmental reason (governing over rational and autonomous subjects of rights and interests) and an external realm of self-ordering complex life (the social and economic sphere, subject to laissez-faire non-intervention), neoliberalism brings complexity into governmental reason itself (the centrality of the 'known unknowns').[20] For Friedrich von Hayek, often considered the archetypal neoliberal theorist, despite the technical gains of science and technology, Newtonian or any other 'natural laws' were merely social constructions.[21] For Hayek, knowledge of reality was not that of scientific and technological laws but other forms of adaptive knowledge learnt by imitation and cultural transmission:

> Rules for his [man's, the individual's] conduct which made him adapt what he did to his environment were certainly more important to him than 'knowledge' about how other things

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[17] Ibid., 35.

[18] To paraphrase Foucault, ibid., 22.

[19] In this sense, what is at stake in modern neoliberalism, according to Foucault, is not a revival of pro-market sympathies or the economic need to 'free the economy' but rather a political mistrust of the extension of a certain form of governing intervention 'from above' seen as producing a crisis for liberal forms of rule, ibid., 68–70; 116–8; see also 130–4.

[20] Ibid., 131.

[21] Friedrich von Hayek, *The Sensory Order: An Enquiry into the Foundations of Theoretical Psychology* (Chicago, IL: University of Chicago Press, 1952).

behaved. In other words: man has certainly more often learnt to do the right thing without comprehending why it was the right thing, and he still is often served better by custom than understanding.[22]

For Hayek – as for Walter Lippmann, John Dewey and today's philosophical pragmatists, new materialists, non-representational theorists, actor-network theorists and post-humanists – there was no relationship between technical and scientific progress and liberal modernist assumptions of governmental reason, which assumed that technical and scientific knowledge provided government with a greater ability to control or direct policy outcomes.[23] While Cartesian or Newtonian constructivism might work for the development of abstract technical and scientific 'laws' with some (although limited) application in the natural sciences, the human world was not amenable to understanding through such conceptual fabrications and crude tools of reasoning.[24] In the face of 'real' complex life, modernist frameworks thus vastly overrated the power of human reasoning.[25] Hayek therefore argued that complex life could not be understood and assimilated into liberal ways of 'knowing' – that the imagined world of the 'known knowns' was much less significant than policy-makers believed:

> Today it is almost heresy to suggest that scientific knowledge is not the sum of all knowledge. But a little reflection will show that there is beyond question a body of very important but unorganised knowledge which cannot possibly be called scientific in the sense of knowledge of general rules: the knowledge of particular circumstances of time and place. It is in this respect that practically every individual has some advantage over all others in that he possesses unique information of which beneficial use might be made, but of which use can be made only if the decisions depending on it are left to him or are made with his active cooperation.[26]

For Hayek and classical neoliberal thought, while governments were denied access to knowledge of complex reality (the 'known unknowns'), the market was able to indirectly make accessible the complex interactions of socio-economic life. The market (as the 'truth' of complex interactive and epistemologically inaccessible life) was idealised as the intermediary connecting local and specific knowledges through prices as indicators. Prices here played a fundamental role of revealing or giving access to the plural reality of complex life and also acting as a guide to future behaviour – how one should adapt to and learn through this reality. Here, complex reality was revealed through embedded relationality – not through abstraction and the artifice of social construction – in fact, it was revealed so clearly that no theory or self-reflexivity was required to learn the 'truths' revealed by the price mechanism.

The lessons that complex life revealed, once these were understood in neoliberal frameworks, were that governmental reason should not seek to plan or direct the external world and instead should focus on more effective forms of evolutionary adaptation

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[22] Hayek, *The Three Sources of Values* (London: London School of Economics and Political Science, 1978), 8.

[23] According to Hayek: 'The conception of man deliberately building his civilization stems from an erroneous intellectualism that regards human reason as something standing outside nature and possessed of knowledge and reasoning capacity independent of experience.' *The Constitution of Liberty* (London: Routledge, 1960), 22.

[24] Hayek, 'Lecture on a Master Mind: Dr. Bernard Mandeville', in *New Studies in Philosophy, Politics, Economics and the History of Ideas*, ed. Friedrich August Hayek (London: Routledge & Kegan Paul, 1978), 125–41.

[25] Hayek, *The Three Sources of Values,* 22.

[26] Hayek, "The Use of Knowledge in Society," *American Economic Review* 35, no. 4 (1945): 519–30.

through properly reading market signals. For Hayek, 'the unavoidable imperfection of man's knowledge and the consequent need for a process by which knowledge is constantly communicated and acquired' depended upon the outcome of market interconnections which demonstrated 'how a solution is produced by interactions of people each of whom possesses only partial knowledge'.[27] No new knowledge was required other than what already existed, but the market did all the work of organising this knowledge. Hayek drew upon Alfred North Whitehead (whose work is receiving much wider recognition today), citing his view that:

> It is a profoundly erroneous truism, repeated by all copy-books and by eminent people when they are making speeches, that we should cultivate the habit of thinking what we are doing. The precise opposite is the case. Civilization advances by extending the number of important operations which we can perform without thinking about them.[28]

The problem for Hayek was an epistemological one of human reason itself. The market here worked as the *deus ex machina*, resolving the problems of the limits of governmental and individual reasoning and providing indirect access to the reality of complex life, without the need for conscious reflection. Neoliberalism as a critical theoretical approach could articulate how complex life posed a limit to policy intervention but not how to go beyond these limits, in cases where policy intervention was deemed necessary. Neoliberal approaches were only confronted with the need to rethink how policy interventions might be necessary after the collapse of the Left/Right framework of politics, and the post-war consensus that supported this, in the 1980s and 1990s. It is in this period that 'actually existing' neoliberalism developed as a set of understandings of how complexity might be governed.

Perhaps the clearest expression of the problem of adapting neoliberal understandings to policy intervention is that articulated by Nobel Prize-winning economist and neoliberal World Bank policy advisor Douglass North. North acutely posed the dilemma: 'Hayek was certainly correct that our knowledge is always fragmentary at best . . . But Hayek failed to understand that we have no choice but to undertake social engineering'.[29] Neoliberal thought found 'social engineering' deeply problematic as the policy interventions of governmental power necessarily appeared to imply the need for knowledge of how social processes operated and the development of instrumental means-ends understandings in support of promised policy outcomes. This challenge of governing necessitated a revision of classical neoliberalism because policy activism was necessary despite the limited knowability of social interactions and the constitution of institutional forms.

For Hayek, it was not possible to rationally reflect on the evolution of cultural understandings and the 'organic' institutions, neither natural nor consciously planned, which reflected these. However, for 'actually existing' neoliberal policy approaches, access to knowledge of the 'known unknowns' became vital. As North stated, this transformation necessarily operated at the level of how neoliberal thought understood 'consciousness' and 'human intentionality'.[30] From the position of governing, it seemed necessary that knowledge could be gained in order to intervene instrumentally in the sphere of complex social interaction. These cultural and ideational preconditions, shaping

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[27] Ibid., 530.
[28] Ibid., 528.
[29] Douglass C. North, *Understanding the Process of Economic Change* (Princeton: Princeton University Press, 2005), 162 (I am grateful to Jessica Schmidt for drawing this passage to my attention).
[30] Ibid.

'consciousness', became the realm of 'bottom-up' policy intervention once linear 'top-down' approaches were seen to be ineffective:

> Understanding the cultural heritage of a society is a necessary condition for making 'doable' change. We must have not only a clear understanding of the belief structure underlying the existing institutions but also margins at which the belief system may be amenable to changes that will make possible the implementation of more productive institutions.[31]

The market was no longer seen as integrating complexity but merely as an outcome of further 'known unknowns': the complex social processes of interaction which themselves needed to be grasped though interventionist techniques. This active and interventionist framing of neoliberalism has been analysed well by Foucauldian governmentality theorists, and others, who have insightfully described these forms of regulatory and technical intervention, extending the role of the state in areas of socio-cultural life held to be the preconditions shaping the environmental and ideational context for social and economic decision-making.[32]

Resilience and the critique of neoliberalism

Neoliberal approaches thus underwent a transformation from the conceptual approaches to complexity, constituted as an unknowable epistemological limit to governmental reason, to 'actually existing' neoliberal approaches which sought to govern through the instrumental use of social engineering with regulatory market techniques. The key point is that in the transition from marginal critics from the sidelines in the 1950s and 1960s to governing authority in the late 1980s, neoliberal frameworks brought into sharp focus the problematic of complex life and its governance. For Hayek, this was never a problem as complex life was constituted as a hidden process and as a boundary limit to governmental knowledge. For neoliberalism as a governing rationality, the contradictions gradually became clearer as policy-makers claimed to be able to intervene in the sphere of the 'known unknowns' on the basis of 'correcting' processes of social interaction, understood as systemic path-dependencies or endogenous social, cultural and ideational constructions.

Thus, while Hayek was clearly working at the level of the epistemological limits to classical liberal modernist assumptions of the 'known knowns', exemplified in the inter-war linear assumptions informing policy interventionism, he was never forced to confront the problem of neoliberalism as a form of governance on the basis of the problematic of the 'known unknowns'. A radical and sceptical critique of liberal assumptions of knowledge was thus transformed into a search for ever more knowledge: a constant process of filling the 'knowledge gaps' required to intervene in social processes of interaction understood as requiring ever more social depth to work on the preconditions for the smooth and effective workings of economic and political institutions. The limitations of neoliberal frameworks, which have sought to govern ever more from the 'bottom-up', through bringing state and market rationalities together to facilitate regulatory governing agendas, is at the heart of

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[31] Ibid., 163–4.

[32] See, for example, Stephen Collier, "The Spatial Forms and Social Norms of 'Actually Existing Neoliberalism': Toward a Substantive Analytics," (working paper 2005-04, International Affairs, June 2005); Noel Castree, "Neoliberal Environments: A Framework for Analysis," (working paper no. 04/07, Manchester Papers in Political Economy, 10 December 2007); Mitchell Dean, *Governmentality: Power and Rule in Modern Society* (London: Sage, 2010); and Foucault, "The Birth of Biopolitics," in *Foucault and Political Reason: Liberalism, Neoliberalism and Rationalities of Government,* eds. Andrew Barry, Thomas Osborne and Nikolas Rose (Chicago, IL: University of Chicago Press, 1996).

the rise of resilience-thinking. Resilience-thinking is thereby a radically distinctive approach to governing complexity (bringing complexity into governmental reason) through reposing complexity as an ontological rather than an epistemological problem.

The increasing centrality of emergent complexity to thinking about governance beyond 'actually existing' neoliberal approaches can be illustrated by examples taken from recent developments in British government policy-making practice and policy-thinking. One example, the UK government's July 2013 document, *The National Adaptation Programme (NAP): Making the Country Resilient to a Changing Climate*,[33] usefully highlights the shift from seeking to acquire a greater knowledge of hierarchical and deterministic processes of social interaction, based on the episteme of 'bottom-up' governing techniques, to emphasising the centrality of the 'unknown unknowns', which require much more self-reflexive forms of governance.

From 1994 to 2011, the UK government operated a national programme for sustainable development, which was then replaced by the NAP. The final report from the Sustainable Development Commission makes sobering reading, as attempts to cohere government around the balances of sustainability and progress became increasingly seen to be problematic for their reductive understandings and the assumption that government policy intervention was the answer. As, Andrew Lee, the Chief Executive Officer of the Commission, stated in his Introduction: 'Increasingly, we face new types of problems – "wicked issues" – which will require new types of response – flexible, adaptive, using systems thinking, seeing the whole picture not just a part of it. One of the watchwords will be creating "resilience"'.[34]

In terms of the typology heuristically laid out in this article, the UK government sustainable development programme could be understood as a classic example of neoliberal governance through simple complexity analysis with the assumption that governance stood outside complexity, able to manage and direct levers of state and market direction to facilitate and enable sustainable outcomes. This approach was subsequently rejected for its reductionist, cause-and-effect understandings and reworked through an increasing attention to general complexity and resilience.

The NAP involves a lot of government intervention and coordination at both national and local levels, even extending new powers to the Secretary of State to direct certain organisations, such as those with responsibilities for critical national infrastructure, to prepare reports on the steps they are taking and will take to deal with the risks from a changing climate: the so-called adaptation reporting power.[35] The point is not that resilience-thinking is against government intervention, but rather how policy intervention is perceived to operate – on the basis of the natural or existing capacities available through removing institutional blockages understood as the unintended outcomes of markets and state policy-making.[36]

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[33] Department for Environment, Food and Rural Affairs (DEFRA), *The National Adaptation Programme: Making the Country Resilient to a Changing Climate* (London: HM Government/DEFRA, 2013).

[34] Andrew Lee, "CEO's Foreword," in *Governing for the Future – The Opportunities for Mainstreaming Sustainable Development,* ed. Sustainable Development Commission (London: Sustainable Development Commission, 2011), 5.

[35] DEFRA, *The National Adaptation Programme,* 9; see also, DEFRA, *2013 Strategy for Exercising the Adaptation Reporting Power and List of Priority Reporting Authorities* (London: HM Government/DEFRA, 2013).

[36] DEFRA, *National Adaptation Programme,* 7.

The analytic annex accompanying the NAP programme report expands on the barriers to natural adaptation and 'identifies market failures, behavioural constraints, policy failures and governance failures as the most important'.[37] Market failures are understood to be inevitable and to stem from the lack of adequate information available under conditions of complexity and emergent causality, including failures to act on such information, in the belief that others will, and the exclusion of vital public goods (especially those connected with the environment) from market considerations. Even more interesting is the understanding of policy failure:

> Policy failures occur when the framework of regulation and policy incentives creates barriers to effective adaptation. This can happen in the presence of competing policy objectives. Similar to the concept of market failure, which as discussed above is a situation that prevents an efficient market solution, this concept must not be interpreted as a failure of policy, but as a systemic characteristic which prevents an efficient policy solution.[38]

Resilience-thinking tells us that policy failure is, in fact, 'not a failure of policy' but a learning opportunity with regard to the systemic process of unintended consequences and side-effects in a complex world, where failure enables policy-makers to learn from the revelation of these concrete and emergent interconnections.[39] Thus, policy failure is construed as distinct from governance failure, which is the failure to reflexively learn from complex life the need to overcome reductionist understandings. Governance failure is the failure of reflexive adaptation, defined as: 'when institutional decision-making processes' create barriers to effective learning.[40] The barriers to governing complexity are thus given full consideration, in terms of the dangers of unintentional outcomes and side-effects.[41]

Given the barriers to both policy-based and market-based decision-making, under conditions of complexity and uncertainty, the NAP is based upon the assumption that policy-making necessarily becomes an ongoing process of relational understanding, binding the policy-makers with the problem which they seek to govern, rather than one of discrete decisions which are then implemented: 'Uncertainty does not mean that action should be delayed. It means that decision-making should be an iterative process and incorporate regular reassessment to consider the latest available information'.[42] In effect, the decision-making process does not take place before policy is implemented, as in the liberal and neoliberal epistemes, but rather as a continual process of self-reflection upon already existing policy entanglements.

As UK government policy-making becomes increasingly attuned to the mechanisms of governance informed by resilience-thinking – those of understanding policy-failure as part of the policy-process and the need for a constantly iterative policy-process of feedback and data gathering – the gap between government and the governed is seen to be

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[37] DEFRA, *The National Adaptation Programme Report Analytical Annex: Economics of the National Adaptation Programme* (London: HM Government/DEFRA, 2013), 6.

[38] Ibid., 7.

[39] As the analytical annex adds:

> "Policy failure" is a well established economic concept . . . but no value judgment is intended on specific policies. Just as a market failure is a problem which prevents the market from operating efficiently, the economic concept of policy failure must not be interpreted as a failure of the policy to bring about a particular solution, but is rather a systemic problem which prevents an efficient policy solution to a problem. (ibid., 10, note 21).

[40] Ibid., 7.

[41] Ibid., 6.

[42] Ibid., 2.

constantly narrowing, as the unknowability of complex life itself comes to constitute the rationality of its governance. Governance is therefore no longer seen to be based upon 'supply-side' or goal-based instrumental policy-making, but rather on the understanding of the processes and capacities that already exist and how these can be integrated into policy understandings. In this way, resilience-thinking should not be understood narrowly, as merely building the capacities of individuals and societies (and thereby little different to neoliberal approaches to the preconditions necessary for sustainable and effective institutions),[43] but more broadly, as a rationality of governing which removes the modernist understanding of government as instrumentally acting in a world potentially amenable to cause-and-effect understandings of policy-making.[44]

The influence of this thinking across the UK government can be seen in the work of both the coalition government and opposition policy-teams. Education Secretary Michael Gove's key policy advisor Dominic Cummings made the UK media headlines in October 2013 with the *Guardian* newspaper's publication of his 'private thesis' on the future of education in a world of complexity, entitled 'Some Thoughts on Education and Political Priorities'.[45] Cummings' main concern in his 250-page document was that, in a world where understanding how complex systems work is vital,[46] there was practically no cross-disciplinary academic instruction concerning complex systems and no specific academic training for powerful decision-makers. For Cummings, the crisis of the political class stemmed not so much from public cynicism about politics as from their own total lack of training in how to deal with the 'real' world in which nonlinear outcomes are to be expected.[47]

According to Cummings, it was not only that policy-makers had no training or knowledge in the complexity sciences, but that the knowledge that they did have about state/society relations was seen to be worse than useless: 'Existing political philosophies are inadequate to serve as heuristics for decision-makers'.[48] This was because:

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[43] This conflation of resilience-thinking, focusing on governing through existing capacities, with neoliberal work on developing and enhancing individual and societal capacities, as a precondition for effective institutions, is partly explained by the tendency to analyse resilience etymologically rather than conceptually (merely through the use of the word in under-theorised policy documents and in popular psychology) and also by the law of Maslow's hammer – many critical theorists, especially those influenced by Foucault, apply his critique of neoliberalism unreflectively to any form of governmental intervention – illustrating that 'it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail' – Abraham H. Maslow, The *Psychology of Science: A Reconnaissance* (Chapel Hill, NC: Maurice Bassett, 2002), 15.

[44] As the 2013 updated UK Department for International Development (DfID), Growth and Resilience Operational Plan states: 'We will produce less "supply-driven" development of product, guidelines and policy papers, and foster peer-to-peer, horizontal learning and knowledge exchange, exploiting new technologies such as wiki/huddles to promote the widest interaction between stakeholders.' DfID, *Operational Plan 2011–2015 DFID Growth and Resilience Department* (London: DfID), 8.

[45] Dominic Cummings, "Some Thoughts on Education and Political Priorities," *Guardian*, http://static.guim.co.uk/ni/1381763590219/-Some-thoughts-on-education.pdf (accessed October 11, 2013).

[46] . . . most interesting systems – whether physical, mental, cultural, or virtual – are complex, nonlinear, and have properties that emerge from feedback between many interactions. Exhaustive searches of all possibilities are impossible. Unfathomable and unintended consequences dominate. Problems cascade. Complex systems are hard to understand, predict and control. (Ibid., 1)

[47] Ibid.

[48] Ibid., 130.

'Established political philosophies including traditional conservatism, liberalism and socialism, which form the basis of background heuristics for political leaders, cannot cope with evolutionary epistemology, either in biology or economics'.[49] For Cummings, the political philosophies of both Left and Right clung to a universal understanding of human nature: for the Right, in order to establish a universal moral grounding in individual responsibility; for the Left, in order to argue for social equality against the workings of the market. These political framings, along with 'the modern "social sciences"' – Marx (in economics), Freud (in psychology), Durkheim (in sociology), Boas (in anthropology) and Rawls (in law) – 'profoundly shaped the "the standard social science model"', which Cummings found to be 'no longer tenable'.[50] Instead of standard social science training, Cummings advised a synthesis of classical, pre-modern philosophical training and a trans-disciplinary understanding of the complexity sciences to equip a future generation of political elites.[51]

But perhaps more interesting has been policy discussions within the key Labour Party policy think tank, the Institute for Public Policy Research. Its directors Graeme Cooke and Rick Muir argue that the 'actually existing' neoliberal policy paradigm of new public management (NPM) has become exhausted,[52] imposing a reductionist, one-size fits all understanding, limiting creative responses and leaving government looking incapable and discredited. The response to these perceived limitations has been that of rethinking the ontology of complexity. As Cooke and Muir state:

> The theoretical foundations of NPM have been challenged by a wave of new thinking across the social sciences. For example, drawing on complexity economics, network thinking suggests that social problems are situated within complex systems that are unsuited to mechanistic interventions. Rather than attempting to engineer outcomes through 'command and control', governments should focus on crafting the conditions for a variety of agents involved in a given problem to solve it themselves. This suggests a greater priority for experimentation, decentralisation and institution-building.[53]

In his book *Everyday Democracy: Taking Centre-Left Politics Beyond State and Market* and in debate with previous Labour strategy chief Geoff Mulgan[54] on the understanding of how the state should operate,[55] Marc Stears, Oxford University Political Theory professor and the chief speechwriter for Labour leader Ed Milliband, has argued that rather than focusing on traditional Left/Right concerns of how to govern through the state or through the market, governance should be done through the revival of 'everyday democracy'.

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[49] Ibid.

[50] Ibid., 131.

[51] Ibid., 2. The elitist implications of complexity understandings were already presciently drawn out by Lyotard, who argued that the end of the modernist meta-narrative meant that knowledge-training provided by universities would be reduced to the transmission of technical skills for the masses while elites would require the imaginative skills of 'connecting together series of data that were previously held to be independent' (Lyotard, *Postmodern Condition,* 52–3).

[52] Graeme Cooke and Rick Muir, "The Possibilities and Politics of the Relational State," in *The Relational State: How Recognising the Importance of Human Relationships could Revolutionise the Role of the State*, eds. Graeme Cooke and Rick Muir (London: IPPR, 2012), 3–19.

[53] Ibid., 6.

[54] Previously Chief Adviser to Gordon Brown and the Director of the Government's Strategy Unit and Head of Policy in the Prime Minister's office.

[55] Marc Stears, *Everyday Democracy: Taking Centre-Left Politics Beyond State and Market* (London: IPPR, 2011) and Marc Stears, "The Case for a State that Supports Relationships, Not a Relational State," in Cooke and Muir, *The Relational State,* 35–44.

Stears stresses, of course, that 'everyday democracy' should not be confused with old-fashioned liberal representative democracy:

> ...I do not mean we should learn to celebrate the democracy of old. The democracy of Westminster and Whitehall, of centralised political parties and ritualised election campaigns, no longer possesses the resources to respond to our nation's needs. Many people do not vote, after all, and even fewer join political parties. Nor do I mean, though, that we should engage in the detailed theorising about constitutional change or voting reform.[56]

'Everyday democracy' involves strengthening social relationships and has little to do with representative democracy, which presupposes that governments are responsible for delivering and imposing 'outcomes', while society merely passively holds them to account every few years. 'Everyday democracy' is not about governing from the top-down or the bottom-up but about social resilience, understood as the existing embedded and relational capacities of ordinary people. It is these capacities that are perceived to be bypassed or muted by instrumentalised neoliberal interventions in the social sphere.

According to Stears, market rationalities are increasingly understood to be no better at dealing with governing complexity than the bureaucratic and hierarchical state rationalities which they displaced. This is where resilience-thinking marks an important shift away from neoliberal uses of complexity in terms of the market as the bearer of the rationality of complex life:

> Put simply, a society that celebrates the free market above almost anything else is a society that encourages people to see each other as tradable objects rather than as people with feelings, commitments, dependents and dependencies. That is why big corporations are able to talk of 'human resources' and why economists sometimes talk of 'human capital'. People are rendered as items on a spreadsheet, on this view, to be moved around at the whim of the powerful in the cause of economic efficiency or success.[57]

Market rationalities are understood to work on the cold metrics of profitability, understanding humans as objects to be manipulated and used, and, most importantly, markets are ignorant of the complexity of relational connections, in the reductionist search for profits and exclusion of externalities such as community well-being and the environment.

While a critique of market rationality is important to Stears' work, it is the alternative ontology through which complex life is brought into governmental reasoning that is of most importance here. Stears, an academic collaborator with the radical democratic theorist Bonnie Honig,[58] argues that instrumental neoliberal governing interventions – on the basis of the 'known unknowns' of social interaction – are also destined to fail. Here, Stears deploys James C. Scott's critique of instrumental and reductive forms of governing intervention, asserting that the problem with states is that they 'make things the same'.[59] This may work well when there is the need for a 'technical, mechanical solution which can be employed everywhere' but does not work in an age of complexity when they need 'flexibly to respond to local particularities, when they need to act nimbly or with

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[56] Stears, *Everyday Democracy,* 5.
[57] Ibid., 12.
[58] Bonnie Honig and Marc Stears, "The New Realism: From Modus Vivendi to Justice," in *Political Philosophy versus History? Contextualism and Real Politics in Contemporary Political Thought*, eds. Jonathan Floyd and Marc Stears (Cambridge: Cambridge University Press, 2011), 177–205.
[59] Stears, *Everyday Democracy,* 20 and citing James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition have Failed* (New Haven, CT: Yale University Press, 1998), 81–2.

nuance'.[60] 'Most crucially', for Stears, 'states' drive to standardise is not an option, not one way of being, but is an unavoidable element of what states are. It is built into the very notion of stateness'.[61]

Stears argues that rather than governing for the market, the state needs to govern through society: through recognising the capacities and capabilities that already exist and could be encouraged if states rejected the Left/Right debates around instrumental state and market rationalities. Our natural abilities to cooperate with each other, to innovate and to construct communities of shared interest have apparently been hampered by the modernist rationalities of both Left and Right. For Stears, the public already have the potential capabilities, but these are excluded and ignored by state-based conceptions, which can only see the public as passive objects of governance:

> Citizens in this story [previous New Labour views, as argued by Geoff Mulgan] generally seem to be passive players, until they are dragooned into behaving in a particular way. Often described as a unitary 'public', Mulgan's citizens always have things done to them by governments – they just have different things done to them by governments behaving as different kinds of states. In their coercive mode, governments control and direct the public. In their delivery mode, governments give things to passive citizens. In their relational mode, governments somehow elicit new patterns of social interaction, acting together to 'achieve common goals, sharing knowledge, resources and power'. [62]

Stears highlights that the problem is not merely top-down modes of coercion or of service delivery, but also bottom-up modes of 'relational' engagement working on patterns of social interaction. To justify his critique, Stears draws on arguments from genetic science, 'neuroscientific studies of reward circuits in the brain that trigger when we cooperate effectively', human geography and pre-modern philosophy to argue that 'everyday democracy', focusing on recognising the role of the existing practices and understandings of the public themselves, can constitute a productive way forward.[63]

The disagreement between Stears and Mulgan, as senior Labour Party advisors, is an important one, highlighting the difference between neoliberal approaches of deterministic complexity and the assumptions of emergent causality at play in resilience approaches. As Stears notes:

> The state can facilitate the creation of relationships if it conducts itself in the *right way*. That, I believe, should be the primary ambition for the kind of state to which we aspire. Our policy agenda should focus not on somehow making the state itself relate more effectively to its citizens, but instead on what it can do to enable citizens to relate more effectively with each other . . . this is no small disagreement: if the state always (or at least almost always) acts as an agent of standardisation then its *direct efforts are never likely to promote a fully relational culture*. Its efforts will be too scarred by the monitoring, control, oversight and . . . the 'audit culture' which are the essential modern accompaniments to a standardising agenda. What this means is that those services which we wish to provide in a relational way must enjoy some level of *protection from the direct involvement of the state itself*.[64]

While Mulgan argued that the state should act in a neoliberal way to effectively intervene in and shape markets to enable then to produce social outcomes and to build direct relationships with communities, Stears views state interference as contaminating or corrupting the natural capacities for adaptation and resilience which already exist and

[60] Ibid., 20–1.
[61] Stears, "Case for a State," 39.
[62] Ibid.
[63] Stears, *Everyday Democracy,* 31.
[64] Stears, "Case for a State," 42.

would be undermined were they to be instrumentally 'directed' to required ends. As Cooke and Muir recognise, Stears reflects a growing shift in policy-thinking, away from finite deterministic 'outcomes' and towards autonomous open-ended 'processes':

> This critique suggests a politics that does not aim towards a known, identifiable end state. It rejects utopianism and embraces uncertainty. Taken to its logical conclusion, such an approach would be a radical departure for the centre-left, which has long defined itself in terms of a 'vision' for how society should be (in words such as 'equality'). In its purest form, Stears' argument is a call to abandon the pursuit of objective outcomes with politics coming instead to focus on the design of processes – especially ones that enable relationships. The specific 'ends' that people make of these 'means' – both individually and collectively – is then a matter for their own determination. This offers citizens, he argues, the prospect of both liberty and responsibility.[65]

Stears' articulation of, what, in this article, has been called, 'resilience-thinking' seeks to abandon both liberal and neoliberal views of government as operating on the basis of developing and then implementing means-ends programmes upon which they can be judged in periodic elections. In a world of generalised complexity, governments cannot be expected to know what policies do or do not work and certainly cannot impose these policies on the world, whether it is a linear blank slate or a nonlinear outcome of deterministic, 'bottom-up' processes of social interaction. Rather than a neoliberal understanding of complex life – as the limit to the power of the state or as amenable to understandings of social causation – resilience-thinking, as articulated by Stears (and as manifested in a variety of policy and academic analysis), argues that governance needs to be reframed in order to recognise the creative and self-ordering power of life itself.

Conclusion

The area where resilience-thinking has gone furthest is in the rejection of modernist or liberal approaches to governance, based upon linear or deterministic knowledge assumptions of causality. For liberal universalist approaches, policy-making is constructed in 'top-down' ways, determined by the 'known knowns' of established knowledge and generalisable assumptions of cause and effect. For neoliberal approaches, operating on the basis of simple or deterministic complexity ontologies, the problematic of governance always lies at the level of the 'known unknowns' – knowledge gaps that require deeper or more sociological understandings of determinate relational causality – the path dependencies and cultural or inter-subjective transmissions of values and understanding.

For resilience approaches of general or emergent complexity in open systems (where there is no separation of governance from the object of governance), the key aspects of concern are the 'unknown unknowns' which are only revealed *post hoc*, through the appearance of the problem. Governance thereby works 'backwards' – from the problem – not forwards to achieve some collective policy-goal. The key attributes which need to be developed in order to govern on the basis of unknowability are those of self-reflexivity and responsivity, which are necessary for governance in a society which is changing fast and where neither the market nor the state seems capable of directing or addressing the changes required.

Resilience can therefore be understood as an adaptation of a postmodern ontology to the problematic of governing *per se*, rather than merely to an understanding of its limits. More specifically, resilience-thinking demarcates itself from actually existing neoliberalism as the governing rationality of the 1980s to the 2010s, which attempted to

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[65] Cooke and Muir, "Possibilities and Politics," 9.

use states and markets to govern complexity in instrumental ways from the 'bottom-up', intervening further in the sphere of social interaction. Neoliberalism as a governmentality sought to govern complexity through instrumentally intervening in interactive social processes to adjust or transform them from the position of the knowing liberal subject, able to balance the levers of the market and the state in order to direct and set goals. In rejecting simple complexity understandings which maintained the subject–object divide between governance and the object to be governed, and the deterministic understandings of causality concomitant with this ontology, resilience-thinking asserts that governance is only possible in non-instrumental ways: in ways which do not assume an external subject position and therefore reject the hubristic assumptions involved in using market and state levers to work on social processes to attain policy-goals.

Resilience-thinking therefore transforms complex life: which is no longer an external boundary limit to liberal forms of knowing and of governing and instead becomes internalised as an ontological truth enabling governance to become self-aware and self-reflexive. Neoliberalism, as a body of theory, which in an age of liberal state interventionism articulated the need to respect complex life as the limit to governance, has therefore undergone a transformation via reflections upon the problems of actually existing neoliberalism, rearticulating complex life as the positive promise of transformative possibilities. It is particularly important to note that it is only 'actually existing' neoliberal rationalities, which aim to direct market and state levers instrumentally, that are discursively framed to be the problem for resilience-thinking, not the neoliberal assumptions of complex life *per se*. Resilience-thinking thereby intensifies neoliberal understandings of complexity and suggests that neoliberalism – as a set of policy practices – still bears the traits of liberal 'hubris' in its contradictory or paradoxical assertions that complex life can be simplified and potentially known by governing power. Neoliberalism as a governing rationality of the last three decades is therefore criticised on the basis of its 'humanist legacies' and its inability to rethink governance on the basis of unknowability. Where neoliberalism failed to properly work through the consequences of postmodernity for governance, resilience-thinking claims to have the solution to the apparent conundrum of governing without assumptions of Cartesian certainty or Newtonian necessity.

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