Building Resilient Finance?

Uncertainty, Complexity, and Resistance

'Real markets are fair, resilient, and effective.'

Mark Carney, Mansion House (2015)

Introduction

An important trend in post-crisis global financial governance has been the spread of policy agendas and theoretical models designed to build a *resilient* financial system. In its 2013 meeting in Davos, the World Economic Forum stated its agenda to foster 'resilient dynamism' in the global economy (2013). The Bank for International Settlements has sought to promote 'the road to a more resilient banking sector' (BIS 2013: 52). Ben Bernanke has called for the production of communities resilient to recession (Bernanke 2013), while economists affiliated to both the World Bank and the IMF can now be found comparing economies and regions on their capacity for resilience to financial crises (Didier *et al*. 2012; De Gregorio 2012).

Of itself, this trend is hardly remarkable. After a period of crisis, bank failures, credit instability, and with the plethora of 'unknown unknowns' on the risk profiles of financial houses and Central Banks alike, the desire to build some resilience into the financial system is understandable. But the drive towards financial resilience sits within a pattern of 'resilience thinking' in other areas of policy-making, where the ability to 'bounce back' and 'adaptability' in relation to 'extreme events' are also emphasized.

Resilience spans several academic traditions, from engineering, to psychology; business studies through to work on adaptive ecologies and complexity science (Brassett and Vaughan-Williams, 2015). In policy terms, 'resilience agendas' have been deployed to manage systemic 'threats' as diverse as flood risk, terrorist attacks, ecological breakdown, and – in the UK – children's early years education (Bulley, 2013; Clarke, 2015). As Jeremy Walker and Melinda Cooper (2011: 144) note “[a]bstract and malleable enough to encompass the worlds of high finance, defense, and urban infrastructure within a single analytic, the concept of resilience is becoming a pervasive idiom of global governance.”

In this article, we develop a critical engagement with the concept of resilience as it has expanded and been attached to finance. We focus on a number of principles of financial resilience that are being developed by the Bank of England, in general, and one of its key policy architects, Andrew Haldane, in particular. In doing so, we entertain one increasingly prevalent view of financial resilience that regards financial networks as complex, inter-dependent systems, which must adapt to a range of global uncertainties, *of which they are themselves* a constituent element. Once recognised, it is presumed, regulators and network agents can use these insights to model the likelihood of system wide ‘events’, such as sovereign defaults and capital flight, in a manner that (supposedly) enhances both their predictability and the efficacy of contingency planning.

On the one hand, we are struck by the potentially radical nature of some these ideas, not least, insofar as financial complexity is cast as a risk element *per se*. We trace how a number of the specific interventions by Haldane suggest a form of critical reflexivity within resilient financial governance that speaks - both implicitly and explicitly - of a marked departure from the pre-crisis mode of operation: transparency, light touch regulation, financial innovation, and diversification (Baker, 2013). On the other hand, we seek to develop a critical analysis of financial resilience that both questions the ‘radical’ status of systems thinking in an obstinately sovereign world of central bank governance, and presses the political question of how financial resilience might be thought and practiced otherwise.

In this sense our critique is also a reconstruction that seeks to foster certain elements in the performance of financial resilience. Especially in light of some of Haldane’s more recent work with the Finance Innovation Lab, we note a turn towards ‘diversity’, which celebrates small market agents, local banks, and low leveraged principles of alternative finance. On this view, we argue that financial resilience can be thought in line with recent work on everyday political economy that foregrounds the agency of everyday market subjects in the construction of market life (Hobson and

Seabrooke, 2007). While elements of Haldane's analysis are overly sanguine and speak to a broader and problematic valorization of ethical investment in policy circles (Langley, 2010), we suggest some ways in which the everyday market subjects of alternative finance can present an alternative, indeed resistant, idea of financial resilience to build from.

The paper is divided into four sections. Section 1 engages the existing critical literature on resilience, which portrays the concept as an important supplement for neoliberal forms of governance in times of crisis (Evans and Reid 2014; Joseph, 2013; Lentzos and Rose, 2009; O'Malley, 2010; Walker and Cooper, 2012). While elements of this literature provide a powerful diagnosis - not least through the politicization of (apparently) apolitical terms like 'uncertainty' and 'adaptability' - we call into question the coherence and success that is implicitly attributed to discourses of resilience in such accounts. On the one hand, resilience policy can be pursued in a variety of different ways, across contexts, each of which may - *or may not* - be related to neoliberalism (Rogers 2013). On the other hand, given its loose and metaphorical form, there is substantial scope for discourses and practices of resilience to either fail or to function in contradictory fashion (Lundborg and Vaughan-Williams, 2011). With this in mind, we build upon the arguments of Judith Butler (2010) to think about resilience as a performative discourse that is narrated differently by different agents, and which may succeed, breakdown, or misfire (Brassett and Vaughan Williams, 2015). On this view, the emergence of financial resilience must be understood in the context of its performance; with a reflexive openness to its capacity for change.

Section 2 therefore identifies the main elements of the move to financial resilience at the Bank of England, namely: systems thinking, adaptability, and the related, somewhat metaphorical ethos of 'clear thinking' in 'complex times'. While systems thinking and adaptability mean that resilience could conceivably open up a range of promising lines of thought/intervention, Section 3 provides a critical discussion of how financial resilience ideas are related to a profusion of theoretical work on financial complexity. These attempts to 'model complexity' – published in journals such as *Science* and *Nature* – entail, for us, a closure, whereby uncertainty is 'known' in particular (and limited) ways. This is not just a point about the scientism of complexity modelling, but is also a political concern over how agency is conceived. It underlines, for us, a general disconnect between the radical rhetoric of resilience agendas that emphasize complexity and reflexivity, compared to the relative banality of resulting policy advice that emerges: top down, surveillance, capital ratios, etc.

Thus, finally, section 4 engages with what we regard as the more interesting potentialities of financial resilience, found in the arguments of Haldane but also in the everyday and popular discussions of alternative finance. In particular, we develop a discussion of recent attempts to establish alternative forms of banking that eschew credit scoring and self-consciously commit to a low leveraged business model. Interestingly, in one such case – *Bank of Dave* – the establishment of the bank is conceived of as a direct and public critique of practices of bank regulation in the UK in a manner that pushes the more radical component of financial resilience identified. We argue that such discursive instabilities represent a potential space of politicization, whereby financial resilience can be imagined in resistant, reciprocal and participatory terms.

1. Resilience: managerial and critical approaches

The burgeoning inter-disciplinary literature on resilience can be usefully divided into two approaches: *managerial* and *critical* (Brassett and Vaughan Williams, 2015). In this section, we briefly outline the managerial approach, which provides insights on the definition and various applications of resilience. We then survey and critique certain critical approaches before making the case for reading resilience in performative terms.

In the managerial approach, resilience is taken as a straightforwardly good thing that should be fostered (e.g. United Nations 2012; Zolli and Healy 2013). It is a quality defined by active metaphors of 'bouncing back' or 'pulling together' in the face of shocks, extreme events or other forms of rupture to 'normal life'. In this way resilience is understood as a positive and proactive quality in light of pervasive existential uncertainty; whereby shocks, death, catastrophe, and all variety of extreme events are taken as a normal element of life that systems (whether ecological, or social) may be more or less *resilient to*.

While initially defined as an emergent quality of individuals or systems, the managerial discourse has gone on to conceive of this quality as something that can be *actively engendered*. Thus, while resilience can be defined in terms of the capacity of an individual, community, or system to bounce back from, or adapt to shocks, this is not the end of the story. Indeed, where resilience is found to be absent or diminished – a managerial view would posit that the qualities of resilience can be proactively developed by making it a priority for individuals, organizations, and states. This might be done through training, specific resources, capacity building, or the pooling of knowledge about and between important agents (Brassett and Vaughan-Williams, 2013).

Increasingly, then, resilience is understood as something that is best further developed through the repeated running of resilience practices themselves, i.e. by learning from various experiences of adaptation, and identifying how such learning can challenge/improve existing practices. Adaptation thus feeds further adaptations in a process of recursive learning; resilience as an emergent reflexivity - within individuals or organizations - to cope with the contingent and uncertain realities of modern life.

While the managerial approach has proved highly successful, spreading easily across issue areas, organizational and policy agendas, a range of critiques have identified the absence of a historical, cultural, or political dimension to such analyses. Resilience – on a managerial account - is taken as an inherently good thing that needs to be developed in virtually all areas of life (Lundborg and Vaughan-Williams, 2011). Against this view, critical approaches argue that the widespread deployment of resilience agendas should itself be questioned: *why is resilience so successful? Why now? With what effects?* More broadly, the critical approach ushers at a deeper politics of resilience in terms of power, governance, and the nuanced processes of legitimation and re-legitimation associated with neoliberal forms of governmentality.

Whereas the managerial approach sees uncertainty and the potentiality of extreme events as the primary existential problematic to be responded to (in better or worse ways), critical scholars question how this ontological idea of uncertainty *constitutes* a particular set of conclusions within resilience discourse. To wit, the inevitability of extreme events is understood as a de-politicising move, which both reduces our ability to question the causes, power relations, and structural injustices that permit them, and defines an 'appropriate' set of proactive and reactive responses.

On this view, for critical scholars, the adaptability that managerial approaches celebrate and foster *must be viewed as itself* an adaptation within neoliberalism: resilience as a supplement to neoliberal re-structuring; part of a more generalised trend to *responsibilise* individuals for the vicissitudes of market life (Dean, 2014; O'Malley, 2010). Indeed, Jonathan Joseph (2013) has argued that resilience can be read as a form of *embedded neoliberalism,* whereby the responsibility for dealing with the excess of politics in neoliberal agendas is re-embedded through individuals and communities. Thus, rather than replicate the managerial assumption that levels of resilience can simply be improved, the critical approach looks to resilience as a disciplinary logic framed as way of coping with uncertainty (Lentzos and Rose, 2009: 243). Uncertainty therefore becomes a supplement for the governmental logics of liberal society via discourses of resilience that seek to foster subjects capable of living with the existential possibility of shock (Evans and Reid 2014; O'Malley, 2010).

At one level, this concerns the 'event', how it is conceived, and how it is effectively taken out of the domain of politics and turned into an object of management. As Mitchel Dean (2014: 160-161) argues, the foregrounding of such events in the neo-liberal imagination works to legitimate, rather than critique, that system:

> '…we witness the emergence of a regime of government that no longer promises an omniscient market order enhancing human welfare but simply accepts the evolution of complex systems and the inevitability of catastrophe. […] crises and catastrophic events can do nothing to undermine this regime. Indeed, they confirm its narrative; the only possible policy direction is to prepare against their inevitability.'

At another level, though, as Pat O'Malley argues, the resilience supplement licenses a diverse set of logics and techniques of the self:

> The new resilient self is…to be achieved rather than taken as natural. Closely linked to a 'duty to be well', it is part of a move to 'empowerment' that displaced ongoing 'dependence' on professionals. As with 'markets' and 'communities', 'resilience' has shifted from being a natural given to being a technique to be applied wherever advantageous, built up, or assembled in ways that resonate with Rose's description of advanced liberal consumers who assemble their lives from an array of commodities. (2010: 505)

The critical literature on resilience does much to situate and problematize the assumed apolitical nature of the discourse. It situates resilience historically in relation to both the restructuring of certain states along neoliberal and/or austere lines; it provides a political diagnosis for the widespread focus on extreme events in public and security discourse; and it problematizes the apparently apolitical nature of norms of individual responsibility (for emotions, for security, for welfare). In this way, the critical literature points to the disciplinary element of resilience.

Despite the importance of this move, we would put in question some of the assumptions and implications that follow. Firstly, we question whether resilience could ever be as coherent or complete as is sometimes supposed. In one passage, for example, Walker and Cooper suggest that:

> "In its tendency to metabolize all countervailing forces and inoculate itself against critique, "resilience thinking" cannot be challenged from within […] but must be contested, if at all, on completely different terms, by a movement of thought that is truly counter-systemic." (2011: 157)

Such a position tends towards reification and a totalisation of *what resilience is* that – in turn – fosters a defeatist tone that overshadows alternative modes of politicisation. And secondly, building from this, we would question the prior and apparently ongoing victory of neoliberalism that is supposed by some accounts. Such accounts potentially downplay certain nuances, internal dilemmas, and ambiguities in how resilience agendas are actually performed. Resilience, we would note, is a relatively new discourse that is being deployed in different ways across different sectors and issue areas. On any reckoning certain authors are quick to judge.

In this vein, David Chandler argues that we also need to conceive of the *'anti-liberal'* dimensions of resilience: that resilience can also function as a critique of traditional neoliberal assumptions of politics. For Chandler (2014: 48) resilience thinking can be seen as 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." On this view, we would suggest that critical scholarship on resilience may need to pay more attention to the particularities, nuances, and contradictions of its current emergence (Lundborg and Vaughan-Williams, 2011). Moreover, emerging empirical studies of resilience could do more to reflect the contingency of it's performance, instabilities, and contradictions (Dunn Cavelty et. al., 2015).

For Judith Butler (2010), the performance of something called 'the economy', including its separation from society or state, is part of a continual (and unstable) process, that depends upon repeated iterations, elisions, and exclusions. For Butler, performativity, indeed a performative approach to finance, is distinctively political because it is incomplete; it often fails or misfires, in Austin's words, necessitating change or contest. Thus, while resilience 'might' overlay a set neoliberal governance techniques: what if we conceived of such a scenario *as a failure* to iterate the radical component identified by Chandler? Or more productively: what if we began to conceive of how "marginalized forms of resilience can challenge dominant forms" (Dunn Cavelty et. al., 2015: 12)?

On this view, the politics of building resilient financial systems is rendered as an open question for research: *how is financial resilience performed in different contexts? What possibilities and limits are performed in its name?* Drawing from the critical literature: *how are individuals and communities conceived/produced?* But then also problematizing some of the implications of these questions: *how do the anti-liberal dimensions of resilience manifest?* Thus, how might we conceive of the productive elements of failure: *what instabilities, breakdowns, or misfires can be identified in the performance of resilience? And can such failure be taken as ground for re-politicisation where the marginal form of resilience might be read as a resistance to the dominant?*

2. Performing Financial Resilience *After the Crisis*

Taken together, the argument of the first section is that resilience cannot simply be understood as a singular discourse, as a supplement to neoliberalism, or as straightforwardly successful. Our task then is to conceive of how resilience has expanded and been attached to finance; with a guiding assumption that this may be different to the mode and context of its application within, say, security or ecology.

One place to start is to begin to think about the recent profusion of resilience thinking across the various auspices of finance in the UK. At the Bank of England, the turn towards resilience is particularly pronounced. The Financial Stability Committee has been joined by a 'Financial Resilience Division'. A series of financial resilience benchmarking exercises have been undertaken that focus on leveraging and debt ratios.[1] In addition, a whole chapter of the Bank's financial stability report was devoted to financial resilience[2] and, as we discuss later, Bank of England staff are now using conceptually rich understandings of resilience in order to drive post-crisis regulatory innovation. Beyond these explicit policy prescriptions, the term 'resilience' has filtered into media and policy reporting on finance, with everything from housing markets and the 'high street' to regions, cities and communities being measured in terms of their resilience to the uncertain post-financial crisis world. In short, the idea of resilience – particularly in its managerial sense - has diffused into public discourse on questions of financial regulation and post-financial crisis economic policy, in general.

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[1] http://www.bankofengland.co.uk/financialstability/fsc/Pages/resiliencebenchmarking.aspx

[2] Chapter 4, 'The Resilience of UK Banks', Financial Stability Report, 2010, pp. 44-54. http://www.bankofengland.co.uk/publications/Documents/fsr/2010/fsr27sec4.pdf

What is interesting in this context is the way that resilience emerges from a very standard set of liberal governance dilemmas associated with the politics of post-crisis response: states versus markets, public versus private, political versus economic control over finance. As Paul Langley remarked:

> 'Whether voiced by academics across a range of disciplines or by media commentators or politicians of various hues, debates about […] public interventions in the crisis […] are usually figured through the binary of state and market, where the former is seen as exercising sovereign and centralised agency in coming to the rescue of the latter.' (Langley, 2010a: 3)

In conceptual terms, the effect of such a binary is to focus critical attention on the restoration of stability on those terms. So, for instance, widespread state-sponsored bailouts raised the question of public accountability of private banks. This issue was even more visible in cases where governments had taken direct ownership of banks. For example the UK government's purchasing a 43.4% stake of Lloyds Banking Group (previously HBOS and Lloyds TSB) raised the question of whether the taxpayer could legitimately demand reforms to Lloyds' strategy and corporate governance in general.

More typically the public/private question resolved into one of how to utilize state power in order to re-instate market discipline such that public rescue is not required. Paul Tucker, then deputy governor of the Bank of England, concluded a speech entitled 'The Crisis Management Menu' (2010: 15), by asking whether,

> "…our community can find ways of distributing the costs of official sector support operations back to the system and its uninsured creditors rather than to the general taxpayer. If we can achieve that, market discipline would be enhanced. We need to hang on to 'market discipline' as a watchword in these debates. The goal of re-regulation – of redrawing the rules of the game for the financial system – should not be to reintroduce the wisdom of the state into micro decisions about how to run businesses. But rather to put market discipline at the heart of a market economy."

In this context, the debate over financial resilience might be thought of as a natural corollary of market discipline. As per the critical approach, resilience might therefore work as a form of embedded neoliberalism (Joseph 2013), re-distributing the responsibility for social adjustment (and values) from the state to the market, from public to private.

In order to unpack this possibility, we must first reflect on some of the sui generis elements of finance, before turning to the specific way in which a concept of financial resilience has been articulated at the Bank of England. Firstly, due to the specific nature of finance and financial governance, there can be no straightforward appeal to critical arguments about resilience developed in disciplines like sociology, critical security studies (CSS), or ecology. The combination of rapid integration and innovation within financial markets means that popular debates about the critical nature of uncertainty in CSS, for instance, are hard to translate to a world where all parties are openly and avowedly dependent upon the growth and profitability offered by such uncertainty. And secondly, insofar as the emergence of financial resilience is distinctive, it is important to retain a sensitivity to how its narration draws liberally from and overlaps with different discourses, including macro-prudential regulation (Baker, 2013), complex systems modeling, and post-crisis management.

As such, and drawing these points together, it is not that resilience has been imported ready-made into the domain of financial governance, but rather that the discourse *has a place and a history*. While actors might draw upon existing logics and rationalities of resilience – not least the trope of 'bouncing back' after crisis – there is also an important sense in which resilience is narrated and articulated in novel ways for distinct circumstances. Holding onto this essential contingency of resilience discourse allows for an ongoing analysis of the term that foregrounds the politics of its uptake and success, as well as leaving space open for alternative narrations.

Read from within a state-market dichotomy, calls for resilience amount to little more than calls for a stricter division of public and private: a resilient financial sector is one that is not so reliant upon the state. For instance, the recent stress testing exercise amongst European banks has modeled resilience in terms of their ability to survive without recourse to public funds, i.e. in terms of market discipline. However, despite the attractiveness of this critique, not least for promoting a healthy skepticism towards a new discourse of governance, we think it is worth examining the intellectual context behind particular moves towards resilient finance.

On our reading, financial resilience can be invoked to underline a paradigmatic shift to understand financial *systems* as adaptive and non-linear. Here it is not a case of 'too much market', or finding the 'right balance' between states and markets, but rather one of transcending the state-market binary in pursuit of a better model of the financial system as a whole. Thus, for all that resilience might be deployed as a straightforward – *almost common sense* - objective of financial agents, we should not ignore the feat of discursive work that has been required to legitimate this transition in thinking. It is not simply that finance has been 'securitised', or that systems theory has been 'imported' to the Bank of England. Rather, specific people have succeeded in pushing their reasoning in an environment of crisis management that is conducive to both elements. In particular, Andrew Haldane at the Bank of England has been an important voice in the performance of financial resilience. In a number of speeches and articles Haldane has made the case for resilience in strident terms, pitching it as both intellectually and politically attractive.

Haldane often draws analogies and inferences between seemingly unrelated phenomena. This has the effect of folding finance within a systems logic that spans more widely than states and markets. In a highly cited speech, he draws a line between finance and nearly all forms of crisis management by addressing the SARS crisis:

> Both events [the failure of Lehman Brothers and the unfolding of the SARS epidemic] were manifestations of the behavior under stress of a complex, adaptive network. Complex because these networks were a cat's-cradle of interconnections, financial and non-financial. Adaptive because behavior in these networks was driven by interactions between optimizing, but confused, agents. Seizures in the electricity grid, degradation of ecosystems, the spread of epidemics and the disintegration of the financial system each is essentially a different branch of the same network family tree. (Haldane 2009, p. 3)

Encapsulated in this bundle of images is a sense of finance as a complex adaptive system, itself an element within a wider set of systems. Finance is held to be both interconnected with other systems and, itself, roughly congruous with them.

A number of interesting ideas about financial resilience are entailed within this sweep. First, it is interesting to note how Haldane's point of reference for thinking about resilient systems is to emphasize their behavior 'after the event', whatever event. This (existential) foregrounding of the event in the imagination of finance holds implications for how we might conceivably think about time, space and political community. Secondly, accepting the logic of extreme events, the focus of resilience is upon optimizing the possibilities for agents in conditions of uncertainty; it is their adaptive behavior over time that is considered to be the crucial element. Resilience is therefore a particular quality, revealed through behaviors over time. Such a gesture is important and also somewhat curious: if agents are optimizing but unknowing, then responsibility for actions is reduced at the same time as we seek to facilitate their future adaptability. This raises the question for financial resilience of: *which agents are imagined, how?* And thirdly, transcending the state-market binary, Haldane's imaginary is of a system of systems, where all are interconnected and dependent. It is not that the state is faced with the traditional question of intervening or not intervening, since the system, as a product of complex relationships, is already established. Thus, in somewhat progressive terms, there is space within financial resilience to think *creatively* about how finance functions and might function differently.

3. Complexity (Science)

Insights developed in complexity science have been an important starting point for thought on post-2008 financial regulation at institutions such as the Bank of England (Cooper 2011), underscoring the turn towards resilience as a policy goal. In broad terms, the argument runs that financial markets are complex systems, which means that they exhibit uncertainty, unpredictability and the potential for crisis, a nature which helps to enable a policy orientation towards producing resilient subjects capable of coping and indeed thriving within that context.

Haldane has been prominent in forwarding a view of financial markets in terms of complexity:

> ‘more of the same _ and better’...That has been the response to every financial crisis of the past fifty years...As a thought experiment, imagine...we were designing a regulatory framework from scratch. Finance is a complex, adaptive system. What properties would a complex, adaptive system such as finance ideally exhibit to best ensure against future crises? Simplicity is one. There is a key lesson, here, from the literature on complex systems. Faced with complexity, the temptation is to seek complex control devices. In fact, complex systems typically call for simple control rules. To do otherwise simply compounds system complexity with control complexity. Uncertainty would not then divide, it would multiply. (Haldane 2011, pp. 2-3)

Simplicity, robustness and timeliness may sound like the traditionally conservative tropes of a financial regulator, yet these appeals to complexity in the search for financial resilience remain ambiguous and under-determined. The openness of both notions of ‘complexity’ and ‘resilience’ has created space for contests over their meaning, and to various attempts to assimilate them from different perspectives.

In order to explore the relationship between complexity and resilience, and how that relationship produces ambiguity and contestation in the financial context, it is important to first recognize that complexity science is not a unified field of thought, but rather a collection of insights and approaches developed in a wide variety of academic disciplines and intellectual traditions. Of particular importance is the way in which representations of complexity have often fallen into two different categories: ‘either very specialized, technical formalisms, such as network clustering algorithms, computer simulations and nonlinear differential equations, or rather vaguely defined metaphors, such as “emergence” and “the edge of chaos”’ (Heylighen *et al*. 2007: 117).

This rhetorical divergence is epistemological in character. In articulations of the more metaphorical type, complexity suggests limits to our predictive knowledge of the world. By this account, non-linearity in cause and effect, feedback mechanisms and ‘near chaotic’ dynamics make the world, at least to some degree, indeterminate and ambiguous, making prediction difficult, if not impossible, in sufficiently complex systems (cf. Little 2012: 6). Yet for those working within the techno-formalistic idiom, the notion of complexity provides the opportunity for *greater* predictive knowledge of the world as it provides the basis for enhanced mathematical modelling techniques (Cooper 2011: 379).

Haldane certainly appeals to complexity as a metaphor for the nature of contemporary financial relations, arguing that the complexity of the financial sector produces a form of uncertainty which cannot be addressed through traditional regulatory mechanisms. Instead, the appeal to systemic complexity underpins a suggestion that regulatory authorities must give up the attempt to match growing market complexity with growing regulatory complexity. This theme of 'simple regulation for complex finance' was developed in a speech given by Haldane in the summer of 2012, where he argues through the 'metaphor' of a dog's ability to catch a Frisbee:

> 'So what is the secret of the dog's success? The answer, as in many other areas of complex decision-making, is simple. Or rather, it is to keep it simple. For studies have shown that the frisbee-catching dog follows the simplest of rules of thumb: run at a speed so that the angle of gaze to the frisbee remains roughly constant. Humans follow an identical rule of thumb. **Catching a crisis, like catching a frisbee, is difficult.** Doing so requires the regulator to weigh a complex array of financial and psychological factors, among them innovation and risk appetite... Yet despite this complexity, efforts to catch the crisis frisbee have continued to escalate. Casual empiricism reveals an ever-growing number of regulators, some with a Doctorate in physics. Ever-larger litters have not, however, obviously improved watchdogs' frisbee-catching abilities.…So what is the secret of the watchdogs' failure? The answer is simple. Or rather, it is complexity.…the type of complex regulation developed over recent decades might not just be costly and cumbersome but sub-optimal for crisis control. In financial regulation, less may be more (Haldane 2012: 1, Emphasis added.).

The rhetoric is full of radical implication: financial markets have become so complex that attempts by well-meaning officials to 'regulate them as they see them' are doomed either to be ineffective or, more probably, to make matters worse. As such, a decisive break from orthodoxy is required – ‘simple thinking for complex times’. Later in this article, we observe some of these implications in action, but what is equally striking is how, in various ways, the radicalism of the vision of systemic complexity has been assimilated to orthodox models of financial regulation and the politics that surround them.

Most obviously, the policy recommendations emerging from this rhetoric are fairly tame: a renewed emphasis on leverage ratios over the more complicated Basel risk-accounting mechanisms (Haldane 2012: 19; 2012a). In this respect, a rebuke issued to Haldane by the incoming governor of the BOE, Mark Carney, was telling. Shortly before arriving as governor of the BOE, Carney – Chair of the Financial Stability Board and the epitome of financial regulatory orthodoxy – challenged Haldane directly, arguing that the more complex risk models established under Basel III were there for good reason; that ‘Basel I was simple and it drove us off a cliff’ (in Harris 2012). Perhaps this was just a spat between two ambitious public officials, but more than anything it marked out the possible terms of debate, guiding it towards technical questions over the efficacy of different accounting rules implemented by states on markets. Regardless of the issue of systemic complexity, the ultimate test of financial regulation was, by this account, the extent to which market-based crisis can be governed by state-based regulation. The metaphor of complexity resolves into a restatement of orthodox, state-based narratives of how to achieve financial resilience.

Haldane’s views are diverse, original and often challenging to current norms of regulation. But the underlying ambiguity of appeals to complexity is noteworthy because it fits in to a longer story about the use of complexity ideas in financial and economic settings. While such ideas are inherently epistemologically skeptical, and the rhetoric surrounding them often bold, notions of systemic complexity have most often been used as a techno-formalistic tool of economic knowledge production. Here, the emphasis is placed upon augmented, rather than diminished, powers of prediction, powers which are oriented towards a defense, rather than a transformation, of existing financial market practices.

The emergence of the research field of 'econophysics', which seeks to apply knowledge from physics to markets, especially financial markets provided a plot from which some of these ideas could grow. Such work has tried to provide 'more realistic' descriptions of financial market behavior using insights from complexity thinking (e.g Mantegna and Stanley 1999; Johnson *et al*. 2003), and academic work commissioned by large investment banks (Marschinski and Matassini 2001: 4) and numerous research centers have emerged devoted to the topic.

In the immediate wake of the sub-prime crisis, the European Commission began funding the Forecasting Financial Crises project, which drew together natural scientists, computer scientists, economists and policy makers under the 7th Framework program. This project has since sought to produce research that *forecasts* financial crises and to engage in various forms of scenario planning. One of the most significant pieces of research to emerge from this research has been the DebtRank model (Battiston *et al.* 2012), which was debuted in an article in *Scientific Reports*, an open-access subsidiary of the journal *Nature*. DebtRank was partly inspired by Google's system of ranking webpages, PageRank, and it attempts to provide a metric by which the connectedness of a financial institution, via debt, to other financial institutions, can be measured. This is achieved by a series of equations into which is fed data on the US financial economy sourced from the Federal Reserve.

The central conclusion that the scholars derive from running the algorithm is that financial institutions which are more interconnected present a greater systemic risk. This insight – *which some might see as fairly obvious* - has caught the imagination of a wide constituency. One financial commentator hastily joined the dots: 'How google can avert the next financial crisis' (Buchanan 2013) and *New Scientist* journalists described DebtRank's architects as 'the financial meltdown forecasters' (Coghlan and Marshall 2012). At the BOE, these messages likely fell on welcome ears. In a 2011 article in *New Scientist*, Haldane argued that, in order 'to navigate economic storms, we need better forecasting' (2011). In this piece, the focus is entirely on gathering more knowledge, developing better modelling and, ultimately, enhancing regulatory power:

> Regulators are talking seriously about introducing common metrics for financial transactions. Alongside that, data warehouses are being constructed to store these raw materials. There are even moves afoot to put these raw materials to work. The US aims to create an Office of Financial Research to collect data from firms and weave the information into a web suitable for mapping and simulating risk. Now imagine the light this financial map might shine. It would allow regulators to issue the equivalent of weather-warnings - storms brewing over Lehman Brothers, credit default swaps and Greece. It would enable advice to be issued - keep a safe distance from Bear Stearns, sub-prime mortgages and Icelandic banks. (2011)

The philosophical skepticism of the metaphorical rhetoric of complexity is replaced by rhetoric of action, albeit mainly geared towards data collection and with little institutional change. Elsewhere, in a working paper written by a BOE economist, a mathematical zoologist and a theoretical ecologist, the same combination of rhetoric is employed (Arinaminpathy *et al*. 2012). The authors apply the complexity frame by drawing parallels between financial crises and the spread of infectious diseases, but ultimately the conclusions remain tame: tougher capital requirements for bigger banks than for smaller ones.

Despite the apparent radicalness of complexity ideas, all of these interventions reify financial market practice as pre-existent, *a reality to which regulation can only respond*. By leaving in place this opposition of free market and regulator, complexity-finance thinking remains open to critiques that highlight the evolutionary nature of financial markets and regulation as one socio-economic form. It could be argued that, whatever capital requirements are in place, banks will find ways to subvert them in the same way that banks and other institutions have increasingly moved their activities 'off balance sheet', indeed in the same way that companies move their operations 'offshore', so as to avoid regulation and taxation altogether. If we see credit crises as profitability crises rooted in declining returns, for example, then tweaking regulation in these ways misses the point because it ignores this 'cat and mouse' dynamic between ongoing processes of financial innovation and responsive regulation (Holmes 2012: 276).

More broadly, the assimilation of the notion of systemic complexity to existing norms has an ideological quality to it since, like any theory of structure, it offers ways to assign, or absolve particular actors of, responsibility. As Brett Christophers has argued, 'the inclination [is] to blame complexity for crisis - to invoke 'complexity' as a causal and sufficient explanation of crisis in and of itself' (2009: 808). But, in the last instance, as Langley (2010a) has noted, finance is, and financial crises are, constituted by *agency*, that is, ethically reflexive *people* interacting with one another.

The standard financial portfolio theories and the variants of the efficient markets hypothesis that shaped regulatory thought prior to the crisis were flawed precisely due to the fact that they systematically ignored the agency of financiers, expressed in their ability to subvert and manipulate price mechanisms and the markets within which they sit (Holmes 2009). In other words, complexity, in both market structure – the continual emergence of new quotable markets, investable indices *etc.* along with the financialisation of non-financial markets – and in product structure – tranching, securitisation, CDOs, CDSs *etc*. – was *actively pursued* by agents on the basis that they offer opportunities for higher profit (cf. Schwarcz 2010: 17). Although the complexity-resilience couplet can appear opposed to misguided pre-2008 equilibrium economic thinking, when it is pitched in a way that sidesteps these issues, it arguably retains the empty structuralism that was so problematic before, fitting in with a long tradition of seeking to remove agents from models of the economy (Kagan 2009: 507).

In sum, then, we can see some of the ways in which the radical implications of complexity/resilience have, via an emphasis on system, been assimilated and made intelligible/workable, within existing discourses of financial regulation: top-down, state/market, etc. But as we have noted, in drawing upon complexity theory, resilience thinking has an important anti- or post-liberal component that problematizes the claims to objective knowledge implicit in standard tropes of liberal governance. Following David Chandler (2014: 48), this position is just as critical of (actually existing) neoliberalism, insofar as neoliberalism relies upon the same types of knowledge claims to construct further/different types of intervention into markets.

In that sense, the assimilation of resilience to a state/market vision of the financial system might be better characterized as *a failure* than a success of the resilience agenda (as it is commonly depicted in the critical literature), or at best a partial articulation that lies in tension with the more transformative possibilities inherent in complexity-resilience thinking more broadly.

4. Alternative finance: resilience and/as resistance?

For all the techno-formalistic renderings of complexity science-as-modelling, an implied skepticism towards the ability to predict and control future events remains an essential part of the notion of complexity. And this skepticism provides ample room for more open readings of complexity because it implies that the knowledge necessary for prediction and control of social affairs by 'those at the top' (Rihani 2007: 140), *may not be accessible*. Thus, the emergent complexity thinking at the Bank of England is a good example of the epistemological politics of complexity in action. Haldane and other researchers are caught between the radical implications of complex understandings of the economy and the desire to turn those insights into knowledge required to exert governance, or in Chandler's words, between the radical 'anti-liberal' implications of resilience thinking and the demands of 'actually existing neoliberalism' (Chandler 2014). In that sense, we return to the dilemma of Section 1, that the performance of resilience may be successful, may fail, or it may be resisted.

Following the critical literature, resilience 'might' instantiate a particular neoliberal vision of the world as a world of risks which must be navigated. For example, Evans and Reid (2014) argue that the sole purpose of the resilient subject is survivability – the ability to 'live with danger' (p.22) - such that life becomes nothing more than the attempt to respond and rebuild in the face of exogenous, given risks and uncertainties. They rightly argue that such a subject is profoundly depoliticized, but, to reiterate our overall point, we would argue that neoliberalism *does not necessarily* exhaust the possibilities latent in the discourse of resilience, nor does it preclude more creative answers to the questions: *'what do we wish to be resilient to?'* and *'how do we wish to be resilient?'*

In the case of finance, for instance, we would argue that these questions are just as likely to provoke answers that *critique* existing forms of neoliberal power. Since 2008, finance has become an openly contested political arena, with trust in financiers and a finance-friendly political class at an all-time low (Carney, 2015). And at least some of this contestation has happened along resilience-inspired lines.

Local currencies, for example, which have proliferated in the post-crisis context, often respond to the same concerns about the crisis ridden nature of neoliberal economies, but are also often organized around the possibility of achieving community resilience in explicit opposition to *both* state and economy (North 2014: 248). Here resilience melds with resistance in ways which do not fit resilience-as-neoliberalism or resilience-as-governmentality critiques. As Peter North has discussed, local and complementary currencies are often conceived a post-crisis critique of the system that carry their own, perhaps marginal understandings of resilience (2014: 249). Quoting interviewees, he writes:

> 'The Lewes Pound "benefits shoppers by creating stronger and more local shops, increasing a sense of pride in our community, decreasing CO2 emissions and increasing economic resilience". Ithaca Hours aim to: "rebuild our economic base, to create a more ecologically and socially just economy which employs more of us, more reliably, at creative healthy work. (2014: 253).'

Such initiatives are usually quite limited in scope and often beset by practical problems, but the point is that alternative currencies allow people to articulate diverse visions of what a successful economy might be (see also North 2007).

Moreover, the resilience of financial community is not just a fringe interest of marginal financial innovators. In a film made by the Finance Innovation Lab entitled: *Transforming Finance*, the case is made for a re-think of the very 'make up' of the financial system.[3] Rather than reproduce a naturalized conception of the financial system, the filmmakers suggest that it can made (and *re-made*) to reflect different levels within the market. In one key passage the film includes a discussion between Haldane and Richard Spencer:

> Andrew Haldane: One of the greatest intellectual mistakes we made in that pre-crisis period is we confused…quite different concepts: the concept of *diversification* (spreading risk across a portfolio) and the notion of *diversity* (meaning having different types of businesses in the market place).

[3] http://financeinnovationlab.org/insights/transforming-finance-video/

> Richard Spencer: If you want a really resilient financial system, it has got to be a diverse financial system. So not just ‘more banks’, but different types of financing entities…in order to build resilience into the system, in order to respond to shocks differently.

This passage is important as it highlights how financial agents might be conceived in terms that fit the resilience discourse. Gone is the exclusive focus on complexity, to reveal a more productive logic that seeks to foster new agents within a complex financial system – put crudely, both the extent *and quality* of financial complexity is in question. On this view, financial resilience is a more open discourse that is being adopted by different organizations and actors. While Haldane is a BOE employee, keen to engage with (mainstream) NGOs like Finance Lab, their use of his ideas to emphasize the role of diversity in building financial resilience is a subtle political emphasis that might open up questions that go beyond - *or even against* - standard BOE regulation agendas. The film explicitly makes the case that resilience is about more than standard market constructs like diversification, or the spreading of risk, instead motivating reflection on the make-up of the system itself and encouraging smaller and different forms of banking.

This theme of smaller banks is something that Haldane has pursued elsewhere in terms of a celebration of the local banking model of Handelsbanken (Haldane, 2012b). In a critical response to the Occupy movement’s critique of 'Big Banks', he highlighted the importance of diversity, but, importantly suggested it was something that individuals could address. On Handelsbanken he suggested:

> They offer only basic banking services, mortgages and small business loans, to people in a tight, locally-defined catchment area. All credit decisions are taken locally by people, not centrally by a computer. No bonuses are paid and no-one has a sales-target. When the whole firm out-performs, a contribution is made to a pooled fund which is invested on employees’ behalf. The fruits of success are distributed equally and gratification is deferred. For banking, this is back to the future. If that sounds attractive, then it is down to us – not regulators, not politicians, you and I – to deliver it. If as bank customers we want to change the culture of banking, then we should start by supporting those banks who are delivering that change. Putting your money where your mouth is would deliver far greater and more durable change than any amount of banker-bashing. (2012b: 10)

The move to local banking in resilience discourse is an interesting one as it pertains to a long tradition of critical thought on alternative finance (Rogers, 2014). Within this tradition, the benefits of the local are set against the norms of global finance in a way that arguably anticipates elements of later resilience discourse (Hines, 2000; Hutchinson et. al. 2002): against the idea of money as a straightforward medium of exchange, localist arguments portray money as a 'claim on society' that can be managed or mediated in order to reflect values of stability, social inclusion, or equality (Douthwaite, 1996). Against the idea of large scales as a necessary precursor to successful banking, arguments for local finance have long supported the concept of small banks, small/low interest loans, etc., as a technique for supporting and empowering community economies (Hutchinson et al. 2002).

What is new is how visible, indeed mainstream, some of these arguments have become in the context of post-crisis calls to financial resilience. While aspects of Haldane's analysis may seem overly optimistic about the political role of individual choices within markets, or indeed, about business model of one such small bank, the line between resilience and resistance has been blurred further elsewhere. In a recent two part series aired by British television broadcaster Channel 4, one such local banking advocate was presented as an important form of alternative finance. The documentary, *Bank of Dave,* charts the attempt of David Fishwick, a businessman from Burnley, to set up a bank which rejects the orthodox approach to banking evinced by major retail banks in favor of a localized, community-based approach:

> Feeling that High Street Banks treat people as credit scores and not as individuals, David decided to return to basics. As such, Burnley Savings and Loans Ltd DO NOT credit score, choosing a more personal approach to underwriting, dealing with customers on a case by case basis…we also offer the opportunity for people to be a part of something that could not only benefit Burnley and the North West of England but EVERY community in the country! …So by offering affordable loans to people who have struggled to obtain finance from the high street banks, through no fault of their own, as well as offering 5% AER on your savings David has proved that the financial industry can also be socially responsible….Any profits received, after the

> overheads are paid WILL BE DONATED TO CHARITY! At Burnley Savings and Loans we do not do big bonuses.[4]

On one hand, the resilience-complexity inspired research discussed in the previous section might suggest that Fishwick's crusade makes good macro-economic sense. If excessive connectedness in banking is a bad thing then, as well as charting and regulating that connectedness, another strategy might be to foster local banking that is not so heavily interconnected in the first place?[5] Certainly this is part of the gambit of diversity: different agents working in different ways can find alternative responses to systemic shock.

On the other hand, the everyday life of Dave Fishwick portrayed in the film, suggests that other factors – geography, class, tradition – are important elements in the (re)production of finance. Not only does Burnley Savings and Loans contribute to the diversity of financial agents in the post-crisis period (e.g. the rise of peer-to-peer lending, crypto currencies, anti-debt movements etc.), it also *politicises* finance. According to Dave, the banks are "shit"; "all they do is shit on people". The appeal of Dave is to combine a post-crisis public mood of critique with a genuinely alternative form of finance.

This is a move beyond localism in general. Dave is not simply promoting a model of local banking, or resisting the large scale. Though he is doing both of these things, it is in a highly visible public context, a move which serves to expose some of the contingencies and fragilities of financial resilience discourse to a large and everyday Channel Four audience. In this sense, the political importance of Dave is move these debates beyond the confines of either academic debate on the one hand or well-meaning social reformers, or community activists on the other, to provide a level of critical publicity that is hard to pigeon hole. In a documentary played out before a broad television audience, local banking moves from being a potential model of resilience to its very politicization.

[4] https://www.burnleysavingsandloans.co.uk/about-us/

[5] This reflects the broad insight emanating from that research, that more regulatory attention should be cast upon large, interconnected financial institutions, involving higher liquidity requirements for more heavily connected institutions (Gai *et al*. 2011).

For instance, a striking issue revealed in the documentary is quite how difficult it is set up a bank at all. Regulations and norms about what banks ought to be, worked to stifle his attempts at every turn, with much appearing to hinge on the legitimate use of the word “bank”. For much of the film, the FSA refuse to meet or even discuss with Dave, even after he tables MPs questions and secures glowing endorsements from senior political figures in the UK. When Dave's business model is eventually reviewed it is rejected because it does not provide a diversified product portfolio, i.e. one that might embrace *higher levels of risk* in order to offer differential interest rates.

In one high point of semiotic comedy, Dave, despite his best efforts to name the institution Bank of Dave, eventually settles for “Bank on Dave!”, where the dual meaning of the term ‘bank’, along with the use of an exclamation mark and quotation marks, is enough to avoid banking regulation altogether. As Dave remarked:

> "They told me that if I use the word deposit or say I'm a bank then I will go to prison. Yet not one single banker in the City, the people who have pocketed millions in bonuses and let us all down so badly, has ended up in prison. God forbid that I should try to offer pensioners 5% interest."

In this story of a person’s battle with bureaucracy, Dave appears to win the fight by establishing a savings and loan company, which effectively performs most of the functions of a retail bank. Yet, at another level, the case can be read as a conflict on the plane of financial resilience. While its economic impact may be tiny, “Bank on Dave!” opens up the possibility of alternative bases for the construction of financial resilience and renders it political by illustrating the politics and hierarchy of financial regulation.[6]

Against the prevailing uncertainties of the financial system – and particularly, the 'big finance' of capital mobility, and highly leveraged financial models – Dave seeks to build networks of finance based on human contact. Instead of credit scoring, he personally meets the borrowers and establishes a relationship. In this way, we

[6] In one passage, Dave is politely advised by a long-time City professional that if he tries to set up a Bank then he would be exhibiting “ideas above his station”.

would argue, an alternative form of resilient finance is in the offing: less risky, more adaptable community/network relations operating outside of the state/market view. This is not the community based resilience of top down neoliberal governance widely critiqued in the literature (Bulley, 2013), but rather the everyday, playful, swearing, resistant resilience of Dave, *from Burnley*. In this sense, we would argue, the anti-liberal dimensions of resilience-as-emergence identified by Chandler might – through occasionally comic iterations - form the basis for a new political economy of reciprocity and inclusion.

Conclusion

Finance, along with many other policy domains, is beginning to explore the potential for resilience thinking to both generate complexity models that aid predictability of extreme events and to build adaptable financial networks that might thrive through crisis. We have sought to refuse either the managerial assumption that this move to financial resilience is something that simply works (and can be perpetually improved), and the critical – *yet somewhat totalizing* – perspective that resilience is no more than a new stage of neoliberal government. Instead, we have explored the contingencies and fragilities of resilience in order to tease out the productive dimensions of what Butler refers to as 'performative agency'. On this view, we need to remain attuned to the success, as well as the failures, of financial resilience; thereby retaining a level of openness to the political possibilities for resistance and critique it may harbor. In playing upon this openness, our interest has been to imagine a form of everyday market subject that can speak about finance - that can be resilient - in ways that are non-identical with the putatively dominant discourse of resilience. By pitching himself and his 'bank' in a playful relationship with financial resilience – part accommodation to local banking, part resistant to dominant articulations of necessary scale – Dave suggests that a resilient financial subject might also be resistant.

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