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Resilience has become a new buzzword among policymakers and academics engaged in a broad spectrum of policy areas and disciplines. The International Monetary Fund (IMF) wants to make the ‘global economy more resilient’ (IMF, 2013); the World Bank and the European Commission (EC) aim at ‘building resilience’ into their economic co-operation and development efforts (World Bank, 2013; European Commission, 2014); the United Nations Office for Disaster Risk Reduction (UNISDR) pursues the goal of ‘making cities resilient’ (UNISDR, 2012); and the US Homeland Security Advisory Council wants to foster ‘community resilience’ (Department for Homeland Security, 2011). This proliferation of the concept of resilience among policymakers has led some scholars to comment that it seems as if, ‘everything (…) and everybody (…) can and should be resilient’ (Boin et al., 2010: 1).

Calls for more resilience frequently emerge in the policy discourse in the aftermath of a major disaster, whether this is a financial meltdown, a natural disaster or a social crisis. At the same time, resilience involves calls for long-term adaptation and learning processes in the context of constant social and environmental change, challenging the properties of surprises and ad hoc short-term policy responses normally associated with crises and disasters. Is the resilience concept’s association with disasters and crises the only reason why risk students should take an interest in the emerging field of resilience? Is resilience simply the conceptual foundation for a response to crises? This article argues that resilience can (but does not have to) be more than just a more elaborate form of disaster risk management. Resilience can offer conceptual and practical challenges and additions to existing theories and practices in the field of risk studies more generally.

The first section briefly discusses the multi-disciplinary origins and varied meanings of the concept of resilience. The second section explores how conceptualizations of resilience relate, resemble and contrast with risk studies along three dimensions, including ontology, epistemology and governance. As this section will argue, resilience can – depending on which conceptualization is chosen – offer a radical departure from risk thinking or simply serve as an extension and recalibration of traditional practices of risk management. The third section will draw out the political implications of resilience. There seems to be a broad agreement among policymakers that resilience is something positive; however, using the concept of resilience in

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relation to authoritarian regimes or poverty already points to possible negative connotations of resilience, raising the question who or what is to be made resilient against what and in whose interest?

The diverse origins and types of resilience

Originating from the Latin word of *resilire*, meaning to jump back, resilience can be understood broadly as an ability to respond to dynamic change that may lead to undesirable consequences; however, the etymological roots and this broad definition conceal that the contemporary concept of resilience has evolved from, and into, a diverse landscape of conceptualizations.

The conceptual diversity reflects the fact that resilience has been used across a large number of scholarly disciplines with distinct traditions, foundations and subject matters, ranging from physics to psychology, from management and organizational sciences to disaster and crisis management, and from ecology and economics to sociology. As a consequence, there are accounts that analyze the resilience of physical materials, individual children, companies, communities and larger social entities (such as cities), economics and ecosystems. Individuals, social entities, materials and systems display resilience in the face of varying events and processes, including disasters, shocks, continuous adversity, non-routine events and change that was not planned for. This proliferation of the concept has led some commentators to question the conceptual clarity and practical relevance of resilience (Brand and Jax, 2007).

Despite the diversity, this section provides three broad conceptualizations of resilience that draw upon discussions from the ‘maternal disciplines’ of the contemporary use of resilience (Holling, 1973; de Bruijne et al., 2010; Davoudi, 2012).

Beyond the physicists in the nineteenth century, psychologists were amongst the earliest adopters of the concept of resilience. They started employing the concept of resilience in the 1940s to describe the ability of children to adapt to negative circumstances, such as abusive parents. Although early accounts stressed personality traits that helped the children to develop well in adversity, later research focused on external factors, such as the social environment, that facilitated adaptation to adversity (Luthar et al., 2000; Schoon, 2006). The definition of resilience by psychologists that emerged describes it as a ‘dynamic process encompassing positive adaptation within the context of significant adversity’ (Luthar et al., 2000: 543). Disciplines, such as organizational and management sciences, have extrapolated some of these ideas for companies in an increasingly volatile business environment (Hamel and Valikangas, 2003).

The second ‘maternal discipline’ of contemporary conceptualizations of resilience is ecology with a distinctive contribution of introducing a systems approach to studying resilience. Developing from an interest in the sustainable management of natural resources, the highly influential concept of ecological resilience – introduced by C. S. Holling in the early 1970s – explored the magnitude of change and disturbance that can be absorbed and managed by an ecosystem whilst maintaining its functionality (Holling, 1973: 17). The concept of ecological resilience is interesting because it departs from traditional assumptions of linear and stable development paths of ecosystems. Instead, ecological resilience assumes multiple equilibria and continual change, and focuses on the persistence of function rather than an efficient return to an assumed equilibrium (Berkes et al., 2003; Walker and Salt, 2006).

In fact, these assumptions of linearity and stability in ecosystem development were traditionally deployed in, what Holling called, engineering resilience. Engineering resilience is concerned with bouncing back to a ‘normal’, stable condition after a temporary disturbance. In this conceptualization, resilience simply measures the time an ecosystem needs to return to its pre-disturbance equilibrium (Davoudi, 2012). In his later work, Holling expanded his concept...
of ecological resilience into a general systems theory covering society, economy and the biosphere (Gunderson and Holling, 2002). In this generalization, Holling and colleagues developed a general model of system dynamics (the so-called ‘panarchy’) in which phases of a system’s rapid growth and conservation are followed by collapse and reorganization and renewed rapid growth as part of a continual adaptive cycle. In this extrapolation, the importance of a shock or crisis in ‘testing’ the resilience of a system became less pronounced, being replaced with adaptation to continual change.

In short, although there is a basic similarity in that resilience concerns the ability to respond to adverse change, descriptions of this change and of the response differ in the conceptualizations of different disciplines. Both psychological and engineering resilience assume that external adversity and change are a deviation from the normal stable development path or equilibrium – and that certain individual properties and environmental factors can facilitate the ‘jumping back’ to this path. The more resilient an entity or system is, the faster a system returns to the more stable and linear development path in the face of disturbances and change. Ecological resilience – and its social extensions – questions the existence of a single stable equilibrium and describes changes and disturbances as continuous and part of a system’s evolution. A system is resilient if it manages to maintain its core functionality as it evolves dynamically.

Relating resilience to risk – modest change or radical departure?

Risk studies are arguably a broad area of research, as this Handbook impressively demonstrates. Since resilience can in general be understood as the ability to respond to potentially harmful processes, the discussion of the relations between resilience and risk focuses on those aspects of risk studies that are concerned with risk as a set of principles and instruments for responding to threats, as discussed in the literature on risk-based regulation or governance (Rothstein et al., 2006; Krieger, 2013). However, resilience studies are also, for instance, concerned with the particular nature and causes of threats, resonating with the literature about the rise and nature of risk in contemporary societies (Beck, 1992).

There are three dimensions through which this section explores how resilience studies resemble, challenge and complement risk studies: first, how reality and adversity are viewed in the two fields (ontology); second, how they can be known and assessed (epistemology); and third, how reality and adversity are acted upon and by whom (governance). Table 29.1 provides an overview of how the resilience concept(s) can be related to risk on the basis of these three dimensions.

The table will be explained in the following three subsections.

Viewing reality and adversity

Risk can be understood as ‘a specific mode of treatment of certain events’ (Ewald, 1991: 199). Specifically, if an event or process is viewed through the lens of risk, it has been assessed in terms of likelihood and weight of harm. The underlying assumption is that events and processes show statistical regularities through which the uncertainty inherent in anticipating future processes can be ‘tamed’ (Hacking, 1990). Even for processes characterized by high levels of complexity, such as (extreme) weather forecasting, advances in science and technology are expected to identify causalities and regularities that enable society to anticipate and respond to potentially harmful processes (Nobert et al., 2015).

In the emerging field of resilience studies, it is possible to discern distinctive treatments of the ontology of reality and adversity. Some contributions to resilience debates, especially in disciplines such as safety sciences, disaster management and environmental social sciences
leaning on engineering resilience, assume the predictability and preventability of disasters and organizational failures, implying the existence of a stable state and linear development paths in nature and society (Adger, 2000; Jones, 2001; Woods, 2005). Other contributions, however, are inspired by Holling’s ecological resilience. In this context, scholars argue that the concept of resilience draws upon complexity theory (Walker and Cooper, 2011; Chandler, 2014). Complexity theory is driven by scientific advances in natural sciences (such as Heisenberg’s uncertainty principle, chaos theory or evolutionary theory), computational mathematics and social sciences (such as Hayek’s discussion of complex social systems and markets), and it suggests that there is no linear relationship between input and output and cause and effect, often illustrated by reference to the ‘butterfly effect’ (Prigogine, 1999; Chandler, 2014; Pugh, 2014). Rather, system outputs and processes are emergent and result from the complex interactions of the system’s components. This does not imply that complexity inevitably leads to chaos, but rather (complex) ‘life spontaneously self-organizes to bring order out of disorder’ (Chandler, 2014: 23).

Whether the world is viewed as stable and ordered in statistically measurable patterns or greater complexity has significant implications in terms of the ability and approach to knowing and governing the world. These differences highlight the extent to which the ontology of resilience can challenge the underlying theories and practices of risk studies.

### Table 29.1 Relations between risk and resilience

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Risk</th>
<th>Resilience concept(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origins</td>
<td>Risk</td>
<td>Engineering resilience (Socio-)Ecological resilience</td>
</tr>
<tr>
<td>Ontology</td>
<td>Regularities – linearity</td>
<td>Equilibria, linearity</td>
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<tr>
<td></td>
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<td>Multiple equilibria</td>
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<td></td>
<td></td>
<td>Continual change</td>
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<tr>
<td>Epistemology</td>
<td>Scientific, quantified risk assessment –</td>
<td>Anticipation</td>
</tr>
<tr>
<td></td>
<td>anticipation</td>
<td>(Qualitative) simulations of complex life (failure to</td>
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<td></td>
<td></td>
<td>anticipate due to resource constraints and complex</td>
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<td></td>
<td></td>
<td>interactions)</td>
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<tr>
<td>Governance</td>
<td>Anticipation – prevention – science-based</td>
<td>Prevention and response/recovery</td>
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<tr>
<td></td>
<td>– centralized</td>
<td>Experimental, flexible adaptation to complexity led by</td>
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<tr>
<td></td>
<td></td>
<td>decentralized, self-reflexive actors</td>
</tr>
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</table>

**Knowing reality and adversity**

Treating events and processes through the lens of risk implies that they can be assessed through the means of science and statistics and be described quantitatively. Traditionally, risk practitioners and scholars deemed it possible to make predictions about the probability and impact of future events and processes, often drawing upon statistical concepts such as the Law of Large Numbers and Gauss’ Normal Distribution, as well as the extensive collection of empirical data in sources such as the population census and epidemiological or river water level data (Hacking, 1990; Bernstein, 1996). More recently, novel assessment instruments, such as Ensemble (Weather) Prediction Systems that integrate ever larger data sets and rely on ever stronger computing power, are deployed to better understand and ultimately reduce uncertainty in complex systems such as the weather system (Buizza et al., 2007).
Part of the resilience debate continues to attribute a major role to anticipation in the response to adversity, most notably in safety sciences and engineering (Hale and Heijer, 2006); however, other scholars point to epistemological limits in assessing and predicting future harm. The increase in interconnectedness, dynamism and volatility in society increases knowledge and information needs to an extent that it becomes too costly for managers and assessors of threats to anticipate them (Wildavsky, 1988). One example is the response to potential threats by high reliability organizations (HROs), such as nuclear power plants. Due to liberalization, deregulation and specialization processes, HROs have become part of networks of organizations rather than integrating most functions under a single roof. As a result, key risk management information and resources are held across different organizations. The complexity of operating in an increasingly differentiated and networked economy makes it costly for HROs to mobilize the resources and information required for risk management (De Bruijne and van Eeten, 2007).

Even more challenging to the underlying assumptions of risk studies, some scholars argue that some challenges and threats cannot be anticipated at all and therefore belong to the category of ‘unknown unknowns’ (Wynne, 1992; Chandler, 2014). This is a consequence of the non-linear and emergent character of life, as suggested by complexity theory. Epistemologically, the implication is that potentially harmful changes and dynamism can primarily only be understood post hoc and learned about through qualitative analyses, simulating complex reality. For instance, financial market experts in the US and UK have started experimenting with ‘non-predictive futurological technologies such as scenario planning, which relies on subjective expectations and counterfactual logic to simulate possible futures of the market’ (Walker and Cooper, 2011: 151). In other words, rather than relying on combining a set of quantitative indicators to predict the development on markets, experts acknowledge that multiple futures are possible and they cannot be known on the basis of ‘objective’ quantitative indicators only.

From an epistemological viewpoint, the emerging field of resilience studies partly follows the assumption of risk studies about the possibility to anticipate the future, but also partly radically departs from these assumptions by questioning even the possibility of anticipation due to the complexity of reality. At the same time, resilience comes with its own, qualitative approach to better understanding the reality in which we are embedded, relying on qualitative, non-predictive approaches to understanding the world.

**Governing reality and adversity**

Risk-based approaches to governance normally aim at eliminating or at least reducing harm to the health, safety and property of the population. One of the key means through which risk-based governance does this is anticipation of the basis of scientific risk assessments. On the basis of this forward-looking knowledge, governance also promises to be more effective and efficient because governance resources, such as money, authority and rules, as well as information, would be allocated to where the risk is greatest (Black, 2005; Rothstein et al., 2006). It is possible to discern a number of key characteristics of risk-based approaches to governance. First, risk-based approaches to governance often assign a substantial role in policymaking to the advice of technical experts and scientists. Moreover, risk-based policy making tends to be centralized in order to ensure consistency, greater efficiency and efficacy in the allocation of governance resources as a result of centralized assessments of risk. Third, given the emphasis on anticipating harm, risk-based governance in general aims at preventing or at least controlling harmful processes and products. This is normally undertaken through risk-based standard setting that involves the quantitative definition of safety goals and standards, delineating safe from unsafe practices and processes and acceptable from unacceptable risks.
Resilience-oriented governance may imply only modest changes to risk-based governance. For instance, a shift in the overall goal of governance can be observed from a strong focus on harm prevention found in risk-based governance to a concern with response to and recovery from harmful processes and events in resilience-oriented approaches (Lewis and Kelman, 2010). In many cases, this shift means a turn towards a more holistic form of managing adversity, covering response, recovery, preparedness and prevention, and implies an acceptance that ‘stuff happens’.

It is, however, important to note that the more radical perspective on resilience-oriented governance evolved as a critique of top–down centralized governance approaches, such as Keynesian macro-economic policies (Walker and Cooper, 2011), liberal interventionism in development cooperation (Pugh, 2014) and natural resource management approaches revolving around the quantification of sustainable levels of exploitation (Holling, 1973). This critique revolves around arguments that such centralized approaches lead to governance interventions too reductionist to capture the complexity of life and thus likely to be ineffective or even counterproductive. In other words, ‘the governance of complexity needs to reject the artifice of impossible goals and direction on the world and instead seeks to find its goals in the process, practices and communicative interactions of the world itself’ (Chandler, 2014: 37). This means flexible, experimental and reversible self-reflexive measures that adapt to the complexity of the world whilst promoting the self-organizing dynamics of complex life. As a result, complex change is not necessarily seen as a threat but as an opportunity for learning and transformation. Resilience-oriented governance is also decentralized and led by communities and even individuals, reflecting the place-specificity of complex interactions and the availability of context-specific knowledge (Paton, 2006; O’Rourke, 2007; O’Malley, 2010). These communities and individuals in turn are embedded in a culture stressing permanent adaptability in and through crisis (Lentzos and Rose, 2009). In terms of governance, resilience offers a very distinctive approach if the assumptions of complexity theory are taken as a basis. Centralized science-driven, risk-based assessment and forward-looking, preventive governance are being replaced by a decentralized, trial-and-error approach to governance.

Overall, the differences that have already emerged in the conceptualizations of resilience in its maternal disciplines are reflected in the ontological, epistemological and governance dimensions of the resilience concept. As a result, resilience at times resembles or complements ontological, epistemological and governance aspects of risk studies, and at times radically diverges from the assumptions often found in risk studies, at least in their classical forms.

**The politics of resilience**

As any buzzword or emerging approach of governance, it is important to examine the underlying politics of resilience. Resilience is – in policy circles – often presented as something positive, emphasizing the capabilities of communities and individuals to deal with adversity and taking a pro-active approach to preparing for the worst, and yet the debate about resilience in governance has been understood as an essentially contested and politically-laden discourse ‘enwrapped with power relations and enabling some effects while closing down others’ (Leach, 2008: 13). There are two main criticisms in relation to the politics of resilience that cast doubt upon this positive evaluation. The first criticism raises the question of whether resilience – seen as an ability to manage and limit change – is not fundamentally conservative. In other words, the more one has invested in existing social-ecological relations and institutions, the more likely one is to view resilience as ‘good’. Those who are marginalized or excluded are less
likely to view a collapse of existing social and institutional structures as an unmitigated disaster (...). The valorisation of resilience then represents a decision – at least implicitly – to endorse the socio-ecological status quo.

(Nadasdy, 2007: 215)

A similar critique is concerned with the focus of resilience-oriented governance on recovery and response rather than addressing the socio-economic causes of the vulnerability to crises in the first place (Lewis and Kelman, 2010). In response, advocates of resilience have suggested that resilience is about ‘bouncing forward’ and a transformation of systems in a way that addresses the causes of hazards and vulnerability (Manyena et al., 2011).

The second, closely related criticism connects the resilience debate with neoliberal governance regimes. On the one hand, the adoption of complexity arguments has been used to criticize the state’s interventions with markets and society (Hayek, 1974; Walker and Cooper, 2011). On the other hand, resilience has been interpreted as a means to create resilient, self-reliant citizens that are prepared for and able to cope with the unpredictable changes and permanent insecurity associated with neoliberal life (Lentzos and Rose, 2009; O’Malley, 2010; Joseph, 2013; Pugh, 2014). Moreover, introducing the notion of resilient citizens has also been interpreted as a form of normalization on the basis of which good, resilient citizens can be contrasted with non-resilient citizens, enabling the emergence of ideas of social Darwinism (Davoudi, 2012). However, others question whether resilience can be interpreted as an integral part of the neoliberal project of responsibilizing citizens. Instead, some argue, resilience has also been used in a context of expanding the state’s capacity to protect citizens (Anderson, 2015).

Ultimately, the discussion of the politics of resilience casts doubt upon the idea that the rise of resilience is a functional and necessary response to an increasing complexity of modern societies and their interactions with the biophysical world, and a way of overcoming the actual limits of risk-based and other forms of liberal and neoliberal governance (Chandler, 2014). Instead, it is important to explore who uses the concept and in what way, for what benefits and with what kind of implications for different groups in society (Galaz et al., 2010).

Conclusions

Is resilience a relevant concept for the field of risk studies? This chapter’s discussion suggests a ‘cautious yes’ as the most appropriate answer. A ‘yes’ is appropriate because, first its rise can be seen as a multi-dimensional challenge to the modernist, liberal dreams of controlling the future through anticipatory governance. As a practical consequence, failures in governance may become more acceptable and interventions more experimental and focused on response, recovery and post-event learning. Second, it highlights the importance of the politics of new governance buzzwords and associated foundations of governance rather than viewing their rise as an inevitable response to changing governance challenges.

The ‘yes’ needs to be expressed with caution, however, because resilience may not offer as much novelty as is sometimes argued – first because some conceptualizations of resilience remain very close in their ontology, epistemology and governance dimensions to traditional risk studies, and second because risk studies themselves have pointed to the growing complexity of contemporary societies and technology and the inevitability of governance failure (most notably Beck, 1992). Others have pointed out how risk-based governance – with its emphasis on probability rather than certainty – has been used to make explicit the limits of governance and the possibility of policy failures (Rothstein et al., 2006).
Whether driven by politics and/or complexity, resilience has become an important concept in policy-making circles, and one that has concrete implications, such as funding of disaster reduction projects (Sudmeier-Rieux, 2014). It is therefore important to critically examine the use of the concept in practice and scholarly debates and reflect on a number of questions related to the conceptualization and politics of resilience: Who uses the concept? How does resilience – in practice and in theory – differ (if at all) from previous responses to change? Who benefits from a particular definition of resilience? Is resilience adopted evenly across sectors and countries? How can similarities and differences be explained? How are the abstract ideas associated with resilience (such as experimental governance or simulations of complex life) operationalized in practice?

References


