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Framing Resilience. From a model-based approach to a management process.

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Abstract

In the last decades the concept ‘resilience’ has gained much ground in a wide variety of academic disciplines, including research on engineering, organizational performance, ecological science, psychology, economics, climate change, disaster management, (systems) safety, security, and risk. Resilience seems to be the answer to a wide range of problems and threats, and therefore garners the attention of policymakers and researchers from different fields and disciplines. As a result, there seems to be a desire to build a holistic, all-encompassing model of resilience that explains which factors contribute to a society’s reliable and safe functioning. Nevertheless, the concept remains subject to debate and diverging interpretations. In this paper we argue for the adoption of a social constructivist perspective on resilience management. Taking into account the influence of processes of sensemaking and framing by stakeholders involved in addressing resilience matters, it would be useful to design a reflexive management process that guides policymakers or other actors through the steps of defining and identifying both what the critical components of the system are to them, as well as understanding which factors they can influence to strengthen the resilience property of the system.

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1. Introduction

In the last decades the concept ‘resilience’ has gained much ground in a wide variety of academic disciplines, including systems engineering, organizational sciences, ecological science, psychology, economics, climate change, disaster management, safety and security research. As Woods and Hollnagel (2006) argue, the focus on resilience might even be seen as a paradigm shift through which the emphasis of research in many disciplines has shifted from the retrospective analysis of ‘unsafety’ (in hindsight) to the comprehension of sources of ‘safety’ in light of threats to the system performance. In simple terms: instead of looking for system vulnerabilities, one would look for system assets that help to mitigate challenging situations. The increased attention for resilience is not limited to academic circles, as policymakers across the world also recognize the value of emphasizing the capabilities of the systems under their influence, rather than pinpointing the weaknesses to more or lesser known threats. Resilience seems to be the answer to a wide range of problems and threats, and therefore garners the attention of policymakers and researchers from different fields and disciplines. As a result, there seems to be a desire to build a holistic, all-encompassing model of resilience that explains which factors contribute to a reliable and safe system, of whatever nature that system may be – a society, a specific community, an organization or system in a more traditional sense. The concept of resilience remains subject to debate and diverging interpretations (Cutter, Burton & Emrich 2010, Shaw, Maythorne 2013) and thus there are many different perceptions of elemental properties and its operational implications.

Inspired by theories of complex (adaptive) systems, there are quite a few examples of studies that attempt to build conceptual and theoretical models of societal resilience (e.g. Cutter et al. 2008, Jordan, Javernick-Will 2012, Longstaff et al. 2010, Norris et al. 2008). In such studies, societies are often approached as complex (adaptive) systems composed of different components or subsystems: social, economic, physical, environmental, organizational, institutional, and so on. These components are closely related and the functioning of the system is determined by the interplay between them. Following Weick (2011) we view resilience as the continuous production of ‘dynamic non-events’, meaning that it refers to the reliable functioning of the system, i.e. its ‘normal state’, with the absence of disturbances and malfunctions. From this perspective, resilience should be seen as the de-facto state of societies. Societies can exist because they are resilient and in a stable state. Resilience should, therefore, be seen as an essential property of the system and not as an external quality that a system ‘possesses’ (or lacks). A thriving society exhibits resilient properties through the interplay of its many components. This means that disruption on one aspect (e.g. an economic crisis) will affect other aspects (e.g. social wellbeing, welfare structures, and emerging community-based initiatives). Strengthening one aspect (e.g. strong social cohesion), will impact other aspects (e.g. economic gains). So, resilience is basically the capacity of a system (society) to keep itself in a stable state, i.e. to continue to be a system. Without resilience, there is no system.

This means that if we talk about enhancing the resilience of a system, we need to define/understand the functional relationships that exist between the various components of that system. In other words, we need to define the extent to which there is reliability and continuity of the systems, functions and principles that are most important to the functioning of the whole system (Flynn 2011). However, because of the complexity of societies it is impossible to objectively define the absolute set of functional relationships that build up the system. Depending on the background of the stakeholders involved, different functions are seen to be critical. Adopting a social constructivist perspective (Berger, Luckmann 1966), we argue that the functions of a system are defined by the perspective through which actors make sense of the system. So, for an ecologist the functions might be different than for an economist. In addition, depending on the specific situation and the specific stakeholders involved, the emphasis of resilience (resilience *of* what and resilience *to* what) will differ. As such, resilience enhancement policies are shaped and negotiated by the continuously changing political climate, cut-backs and dominant societal discourses (‘trending topics’). As Ali and Jones (2013: 11) state: “At a practical level, alternative, complementary and contradictory values of economy, environment, community and security resonate and compete in different jurisdictions, departments and decision spaces”. Furthermore, the very definition of the problem (i.e. specific threats to the system, and thus the resilience of that system) is shaped by local historical and political experience. For instance, a threat of flooding might not be very relevant for a desert community. Therefore, their perspective on resilience will most likely not encompass their capacity to withstand such a threat. In that sense, their intrinsic definition of the term *resilience* will differ from that of a community in a flood-prone area.

As a consequence, it does not suffice to build a model of (system) resilience, since the exact definition of critical components and functions will depend on the specific context and purpose for which the model is formulated. Instead, we argue that the knowledge about resilience and the intricate relations between different components within a complex system should be used to develop an approach to resilience *management*. Taking into account the influence of processes of sensemaking and framing by stakeholders involved in addressing resilience matters, it would be useful to design a reflexive management process that guides policymakers or other actors through the steps of defining and identifying both what the critical components of the system are to them, as well as understanding which factors they can influence to strengthen the resilience property of the system.

In the next section of the paper we will discuss some resilience enhancement approaches and highlight the strengths and weaknesses of those approaches, and how these could be addressed by adopting a resilience management approach. We will then discuss the benefits of adopting an interpretive perspective on resilience enhancement and what this implies for the resilience management approach we propose. The paper ends with a few concluding remarks and suggestions for future research.

2. Approaches to resilience enhancement

With so many different interpretations of the term ‘resilience’, it is obvious that there are just as many different types of resilience enhancement approaches. Many communities of practices endeavor to establish good practices, but their intent and emphasis differs quite significantly. Some are focused on enhancing resilience within a specific sector; others are aimed at a specific type of disaster or disaster-phase. We will briefly highlight some recognizable types of approaches.

The first type of approaches that we can identify are phase-oriented resilience enhancement approaches. Such approaches would focus on enhancing resilience during a certain stage of a disaster. The UNISDR defines resilience as ‘*The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions*’. We can relate the main elements in definition to different phases of a disaster. In the typical preparedness phase, the focus would be on enhancing the capability of a society to resist a threat, and in effect prevent a disaster from happening. In a disaster response phase and the later recovery stages, the value of resilience enhancement would be to increase the absorption, accommodation and recovery capabilities of a society. Every well-developed nation will have its own disaster preparedness, response and recovery programs, so examples of this type are abundant.

Another type of resilience enhancement approaches are those that are threat-oriented. Such approaches would focus on a specific type of threat, such as varieties of natural disasters (e.g. floods, earthquakes, wildfires, droughts) technological or man-made disasters (e.g. industrial accidents, terrorist acts, critical infrastructure failure). Such approaches usually result from local or national risk assessments, where countermeasures against high-risk threats are formalized into procedures and standards.

A third type or approach would be the community-oriented approaches. Many societal communities develop their own resilience approaches, especially those that are vital to the functioning of society. A prime example of such a community would be the various critical infrastructure sectors. In most developed countries, critical infrastructure providers and their partners develop specific resilience strategies as to safeguard their production in disaster situations. Good examples can be found in the energy and telecommunications sectors in which elaborate routing provisions are made as to create enough backup capabilities to withstand various disasters.

Specific societal groups can also be the focal point of resilience enhancement, such as vulnerable groups or minorities. The objectives of such approaches would be to enhance the capabilities of societal communities to withstand specific disasters. Aside from nationally-developed frameworks of this kind, there are many good examples in the humanitarian domain. Many NGO’s such as the UN and the Red Cross have working procedures to enhance the safety of vulnerable communities, as do many locally active humanitarian organisations.

Finally, we can recognize a fourth major type: comprehensive resilience enhancement approaches that aim to transcend societal sectors, disaster types or disaster phases, and rather focus on actions that increase resilience in general sense. These approaches are usually general in nature, target the whole of society, and are rather process-oriented than solution-oriented. Several nations have developed such all-hazards, all-communities resilience

frameworks, such as the Australian National Disaster Resilience Framework, the UK the National Resilience Capabilities Programme, and the US FEMA National Planning Frameworks. In practice, these frameworks will contain sections that focus on local priorities and specific disaster phases.

Despite the many varieties of resilience enhancement approaches, and the great importance that is put on these approaches, there are many issues connected to resilience enhancement frameworks. The unpredictable nature of disasters and the complexity of societal response make it hard to anticipate properly, and create robust resilience enhancement strategies. Additionally, severe disasters typically cause a system shock that is not covered by regular response plans, and thus cause them to fail their planned effect. Thirdly, resilience enhancement efforts often suffer from underestimation of the deeper consequences of a disaster. The effects of a disaster may trickle down to many societal sectors, well beyond its initial impact.

For these reasons, resilience enhancement approaches are hard to reuse in different domains or for a different purpose than they were initially developed. Also, even though approaches may be labelled as being generic and transferrable, there is often an implicit 'context bias', meaning that the context of the originating author group has influenced the approach, and has framed the solutions in such a way that is potential in other contexts in limited.

3. Towards an interpretive perspective on resilience management

The increasing focus on resilience implies that we are moving away from traditional risk management approaches. It is recognized that we cannot prevent or prepare for risks that are unknown and therefore governments are searching for those capabilities that strengthen the performance of society's critical functions regardless of specific threats. However, this seems to be an ambition that is difficult to meet. Resilience, security, risks, threats, vulnerabilities, etc. are all social constructions that obtain their meaning in interpretive negotiations and processes of framing and (discursive) legitimation. As Gill (2011: xviii) states: "we should be cognizant that resilience is a social construction – a process reflecting power and values, and involving stakeholders, claims, counter claims and claims makers. This suggests that resilience may be temporal and localized- what is considered resilient today may not be resilient tomorrow, and one size does not fit all". As such, it is important to problematize the often taken for granted 'truths' or rationalizations of problems, plans and policies, in order to understand how specific interpretations and negotiated meanings influence the direction of policy development. The area of resilience is no different than other policy domains in a sense that there is no objective 'truth' about what resilience is. The resilience of a system lies in the interpretations of policymakers and other stakeholders

During the last few decades a growing body of research has emerged that takes an interpretive, constructivist approach to policy analysis (see for instance Fisher, Forester 1993, Schön, Rein 1994, Yanow 1996). The main reasoning behind this approach is that the production and implementation of policies is not a rational, objective matter. Rather, it recognizes the socially constructed nature and inter-subjective interpretations of the problem that shape policies and policy targets. Everyone's perspective on the world is influenced by and mediated through contextualized (socio-cultural) systems of meaning. Such cognitive frames provide our experiences in reality with meaning. This means that our construction of reality is determined by the specific socio-cultural system of meaning that we use to interpret it. As a result, there is not a single, absolute truth about reality 'out there', but only intersubjectively constructed interpretations of reality. Following this reasoning, policymakers draw from their specific cognitive frames to evaluate the situations and problems which they address in their day-to-day work. It is the aim of interpretive policy analysts to uncover the underlying frames and processes of sensemaking to understand how specific policies and political discourse come to dominate the public arena.

The majority of interpretive policy research originates from (critical) studies in public administration, political sciences, or organization sciences. We propose to apply this type of approach to the field of disaster management and resilience policy making. The benefits of this interpretive approach, as Richard Freeman (n.d.) argues, lies in its ability to generate among policy makers and scholars alike "a renewed attention to the process rather than the product of policy making. Its questions are not 'What should we do?' but 'What are we doing?', 'How do we do what we do?' and perhaps 'How do we work out what we should be doing?' Its focus is on the assumptions and practices of policy. In this way, it generates among policy makers a second order of awareness of what they do and what they might do differently". In other words, it will help policy makers in the area of resilience to reflect on what it is that they are trying to achieve, rather than aiming for an unknown goal of ultimate societal resilience.

To facilitate the interpretive perspective on resilience management, we propose a number of essential activities to be included in resilience management efforts. These activities revolve around setting a proper frame around the notion of resilience. The first activity that we propose is *intent framing*. Intent framing involves an explicit definition of the intent of the resilience management efforts. Intent might point to the actual purpose (e.g. prevent a certain area from flooding), or to a more

The second activity that we propose is *actor framing*. In order to make a resilience management effort transferrable and adaptable, its prime target group needs to be clear and the community of actors that are deemed to have an influence on the target group. Which actors (organisations, stakeholders, and individuals) are asserted to act, and which actors influence acts?

A third proposed activity is time framing. Resilience is a concept that is relevant in various disaster-stages, but its manifestation differs per stage. In a disaster preparation stage, resilience refers to prevention capabilities, whereas in a disaster response phase, resilience will usually refer to absorption or accommodation capabilities. Therefore, the valid time frame for which the resilience management activity is undertaken needs to be made explicit.

A fourth activity would be *context framing* which would make the intended target environment explicit. The target context needs to include all relevant environmental factors that have a bearing on the resilience management, such as the geospatial setting, the societal setting including social, governmental and economical aspects, and the purported infrastructural and technological setting.

Together, these four activities provide an explicit frame for the resilience management effort, and facilitate a more objective and constructive take on resilience enhancement. Additionally, by explicating the frame of a resilience management effort, it becomes easier to assess whether the approach would be viable in another context. In follow-up research we need to establish whether such explicit framing activities provide the purported practical value, and thus contribute to more effective resilience management efforts.

4. Concluding remarks

In this short paper, we have argued that it is important to view resilience management as a constructivist activity, and thus emphasizing on the need to properly frame the intent of the effort. We have briefly introduced a number of foundations for this notion, and introduced four essential activities that need to be included in any resilience management effort: intent framing, actor framing, time framing and context framing. These activities can to a certain extent be recognized in many resilience management efforts, but we believe they be brought to the foreground and become the starting point of any effort.

References

- Ali, F.M.M. & Jones, K. 2013, "Negotiating community resilience in the city in a time of political change and deficit reduction", *International Journal of Disaster Resilience in the Built Environment*, vol. 4, no. 1, pp. 9-22.
- Berger, P.L. & Luckmann, T. 1966, *The Social Construction of reality. A Treatise in the Sociology of Knowledge*, Anchor Books, New York.
- Cutter, S.L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E. & Webb, J. 2008, "A place-based model for understanding community resilience to natural disasters", *Global Environmental Change*, vol. 18, no. 4, pp. 598-606.
- Cutter, S.L., Burton, C.G. & Emrich, C.T. 2010, "Disaster resilience indicators for benchmarking baseline conditions", *Journal of Homeland Security and Emergency Management*, vol. 7, no. 1.
- Fisher, F. & Forester, J. 1993, *The argumentative turn in policy analysis and planning*, Duke University Press, Durham & London.
- Flynn, S. 2011, "A National Security Perspective on Resilience.", *Resilience: Interdisciplinary Perspectives on Science and Humanitarianism*, vol. 2, pp. i-ii.

- Freeman, R. n.d., , *What is 'interpretive policy analysis'?*. Available: <http://www.richardfreeman.info/answer.php?id=18> [Accessed: 15 April 2014].
- Gill, D.A. 2011, "Foreword" in *Community Disaster Recovery and Resiliency. Exploring Global Opportunities and Challenges*, eds. D.S. Miller & J.D. Rivera, Auerbach Publications, Taylor & Francis Group, Boca Raton, pp. xvii-xx.
- Jordan, E. & Javernick-Will, A. 2012, "Measuring Community Resilience and Recovery: A Content Analysis of Indicators" in *American Society of Civil Engineers*, , pp. 2190-2199.
- Longstaff, P.H., Armstrong, N.J., Perrin, K., Parker, W.M. & Hidek, M. 2010, "Building Resilient Communities A Preliminary Framework for Assessment", .
- Norris, F.H., Stevens, S.P., Pfefferbaum, B., Wyche, K.F. & Pfefferbaum, R.L. 2008, "Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness", *American Journal of Community Psychology*, vol. 41, no. 1-2, pp. 127-150.
- Schön, D.A. & Rein, M. 1994, *Frame reflection: Toward the resolution of intractable policy controversies*, Basic Books, New York.
- Shaw, K. & Maythorne, L. 2013, "Managing for local resilience: towards a strategic approach", *Public Policy and Administration*, vol. 28, no. 1, pp. 43-65.
- Weick, K.E. 2011, "Organizing for Transient Reliability: The Production of Dynamic Non-Events", *Journal of Contingencies and Crisis Management*, vol. 19, no. 1, pp. 21-27.
- Woods, D.D. & Hollnagel, E. 2006, "Prologue: Resilience Engineering Concepts" in *Resilience Engineering. Concepts and Precepts*, eds. E. Hollnagel, D.D. Woods & N. Leveson, Ashgate Publishing Limited, Aldershot, UK, pp. 1-16.
- Yanow, D. 1996, *How does a policy mean?: interpreting policy and organizational actions*, Georgetown University Press.