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EXTREME CLIMATE EVENTS AS OPPORTUNITIES FOR RADICAL OPEN CITIZENSHIP

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Droughts, floods and other natural catastrophes related to climate change belong to a class of global risks that have downstream effects on the economy and productivity of settlements, social cohesion and administrative institutions. This represents growing challenges for adaptation strategies and disaster management. In order to increase the overall resilience of socio-ecological systems, civil society will be compelled to draw from its self-organisation rather than relying on increasingly unstable established structures. Based on the exploration of 20th century concepts such as “horizontalidad” and “right to the city”, this article explores characteristics of resilience that offer possible responses for civil society.

INTRODUCTION

Many Europeans vividly remember the images from the severe 2013 flooding that destroyed large amounts of property and goods in Austria, Switzerland, Germany, Hungary, Poland and other central European countries. Such natural disasters are on the rise due to climate change and are becoming costlier. In 2012, global losses from these kinds of events totalled €120 billion, of which about 40% were actually insured losses (MunichRE 2013a, 2013b). Urban areas in affected regions generally suffer most heavily from losses and fatalities, as they are trading and innovation hubs, contributing about 75% of the global GDP.

These topics are one example of how the effects of climate change are felt across varying temporal and spatial scales, ranging from local communities to institutions in the global financial system. Given the rising number of extreme weather and climate events (Intergovernmental Panel on Climate Change 2013), policy and societal coping strategies are increasingly challenged (Coumou & Rahmstorf 2012). Coping with and adapting to changing environments and new challenges has become part of the transformation towards sustainability (WBGU 2011). As a result, it is necessary to develop solutions that address the roots of unsustainable production and consumption as well as practices that reduce greenhouse gas emissions (Weisz & Steinberger 2010) in order to empower entire urban areas and regions and to develop their overall resilience.

High levels of uncertainty about future developments related to climate change call for flexibility and adaptive capacity. Lengthy top-down processes require more responsive, communicative and iterative decision-making structures; this means that bottom-up

processes from civil society are particularly important. Civil society therefore needs to develop the tools to implement adaptation tactics and response strategies considering the possible destabilisations of economic and political institutions in response to extreme weather events. This leads to the conclusion that sustainability is not a straightforward reform programme, but a radical search process that requires exploring different and so far untested paths (Morin 2011). As such, studying historical patterns of major socioeconomic changes can teach us crucial lessons about sustainable development (deVries 2013). In other words, a look back on past societal transformations provides insights into societies' capacities to manage events of crisis, such as extreme drought or flooding, economic meltdown, pandemics and famine (Costanza et al. 2007). In this context, niche and "utopian" practices such as intentional communities (Andreas & Wagner 2012) can operate in the long run as important transformative elements within the whole dynamic of change (Fischer-Kowalski & Rotmans 2009; Jamison 2012).

This article explores such movements from the 20th century as well as resulting changes in order to better understand how civil society could be empowered to tackle extreme climate events, thereby increasing societal resilience and contributing to a sustainability transformation. It uses the framework of resilience thinking to explore examples and potentials at the level of civil society's responses to extreme climate events that address consequences and foster solution options. In this way, it introduces resilience thinking and puts into this context past experiences that hold learning opportunities for EU civil society to deal with the extreme weather events resulting from climate change.

CLIMATE CHANGE THROUGH THE LENS OF RESILIENCE THINKING

The multidimensionality of global development trends and their manifestation in social-ecological systems (SES), such as the urban system, requires a radical rethinking of current development patterns to successfully navigate towards sustainability. To shift systems onto this desirable pathway, it is critical to consider the dynamics and complexity of introduced solutions and their resilience (Westley et al. 2011; Ernstson et al. 2010). Resilience refers to the capacity to absorb disturbances and withstand stress – such as climate change-related events – and eventually rebound (Holling 1973; Folke 2006). Actors deal with constantly changing conditions and contribute to

the system's adaptive capacity: they utilise knowledge, learn, adjust their responses and thus increase systemic resilience. In the long run, when a system faces declining resilience, even small shocks can break down existing structures of economic, social and natural capital. During the following phases of development, entrepreneurial social actors experiment with transferring successful practices into innovative models and exploit niches for dissemination (Folke et al. 2010; Walker & Salt 2006). These concepts of resilience thinking provide a lens to observe climate change, but also to mobilise understanding towards changed development patterns.

Climate change can critically hinder a society's capacity to develop on a sustainable pathway. Conversely, a sustainable transformation can reduce vulnerability to climate change while enhancing resilience and adaptive capacity (IPCC 2012). Climate change dynamically impacts local and regional economies, consequently disturbing global markets far beyond the short-term costs of reconstruction, and pushing the societal burden onto future generations (Hallegatte, Hourcade & Dumas 2007). Adaptation¹ actions are undertaken under conditions of uncertainty regarding effectiveness or even unintended adverse effects. The complex urban environment in which actors and socioeconomic processes interact with the natural and built environment requires careful consideration to spot effective leverage points.

Reviews show that enhancing urban resilience as one form of adaptation to climate change is approached from different angles, such as (i) urban hazards and disaster risk reduction and (ii) ecological, economic and institutional/governance perspectives (Leichenko 2011). Resilience strategies are embedded in a variety of different types of institutional modes and mechanisms that mainstream collective adaptation strategies under policies and plans. In high-income countries, strategies primarily use a top-down approach with communication across agencies (Wamsler, Brink & Rivera 2013). For example, projects such as CLIMATE-ADAPT, Climate Friendly Cities and the European Climate Change Adaptation Strategy (EEA 2012) by the European Environment Agency emphasise a multi-level governance approach that coordinates adaptation and implementation across scales down to local urban administrations. Studies from Ireland and Cumbria (Adger et al. 2012), Norway and New Zealand (Brien, Bronwyn & Berkes 2009) highlight evolving social contracts relating to new conditions under climate change. Social contracts legitimate arrangements between civil society and the state and entail obligations and constraints for all parties (Brien et al. 2009). Evolving contracts deal with new ways of ensuring citizens' welfare

1. Adaptation here is defined as "changes in social-ecological systems in response to actual and expected impacts of climate change in the context of interacting non-climatic changes. Adaptation strategies and actions can range from short-term coping to longer-term, deeper transformations, aim to meet more than climate change goals alone, and may or may not succeed in moderating harm or exploiting beneficial opportunities" (Moser & Ekstrom 2010: 22026).

and aim to address the interconnected risks that arise from climate change, i.e. threatened predominant social and economic structures as well as increased intergenerational vulnerability. These examples illustrate how the field of renegotiations for resilience-informed social contracts is progressing gradually.

Both the Global North and South will experience limits and barriers to climate change adaptation. Climate change itself will manifest as a series of smaller and bigger extreme events that continuously shape and change social-ecological systems (IPCC 2013). Some extreme climate events may exceed a particular threshold or tipping point² and cause regime shifts, accelerated transformations with fundamental challenges for the social fabric and established institutional and political processes (Folke et al. 2010; Walker & Salt 2006). Adaptation strategies to these new regimes and surrounding conditions are still necessary, yet possibilities are difficult to assess due to uncertainty. Limiting factors to adaptation are mostly framed around physical and natural borders, technological limits and economic limits. Yet, the socially constructed character of limits to adaptation unravels even further when looking at issues such as values and relationships that underlie actions (Adger et al. 2008). Consequently, these social constructions are a leverage point when weighing the potential of resilience characteristics in order to design climate change adaptation strategies. Thus, to enhance resilience, the following four characteristics are considered significant:

- *Response diversity*: Folke (2010) labels this a “portfolio of responses” that acknowledges the dynamics and networks of a system (152). The diversity is built through the links between the processes across sectors. The focus on top-down institutional organisation and adaptation in planning for urban areas lacks, especially in the Global North, the variety of these required combined responses from both ends. This feature gains importance in the event of regime shifts when solution options are consolidated under new conditions (Brien et al. 2009).
- *Types of knowledge and flexibility*: The reorganisation of knowledge, the learning patterns and innovative capacity are vital for finding and changing to new trajectories. Innovative capacity depends on a local availability of knowledge e.g. in urban areas (Ernstson et al. 2010). Flexible solution options promote learning and break the destructive patterns that contributed to anthropogenic climate change (Brien et al. 2009).
- *Self-organisation*: A fundamental capacity of adaptive

2. The terms “tipping point” and “threshold” describe limits that, if crossed, cause major changes for the system and its characteristics, for example damage of biodiversity and loss of resources (Walker & Salt 2006). The most prominent threshold/tipping point in this public debate is the reduction of carbon emission in order to stay below the 2°C goal.

systems is their potential to self-organise. In urban systems, self-organising capabilities lie with actors who actively shape, as well as continuously respond to surrounding networks. In models of multilevel governance, state-assumed responsibility to organise and regulate practices could hinder the emergence of self-organisation (Brien et al. 2009; Tompkins & Adger 2004).

- *Redundancy*: Loose resources in the system leave opportunities for redundancy. In contrast, high efficiency leads to low system resilience. This idea applied to planning with highly optimised infrastructure and streamlined policies illustrates the lack of open resources in a system. Costs related to the requirement of redundancy are a trade-off between causing higher vulnerabilities or causing equity issues in the future (Wamsler et al. 2013).

The key characteristics of resilience thinking broaden the discussion on adaptation strategies to climate change. Potentials for novelty and renewal lie in the ways societies are organised and in the links between societal processes and institutional arrangements, even when thresholds are crossed. Utilising these potentials would promote sustainable, locally adequate and resilience-enhancing socio-technological innovations (Smith, Fressoli & Thomas 2014).

SELF-ORGANISATION AND SIDEWAYS TOWARDS RESILIENCE

Frequent and extreme climate events caused by climate change will sooner or later throw societies into major crises of levels yet unknown. Recent extreme weather events, and societal responses to them, can offer us only limited perspectives into possible future challenges. We thus need to look elsewhere in our histories, particularly into such crises that shook institutions and revealed the inherent resilience capabilities of societies and citizens in extreme situations, which allows us to ask the following question:

How will urban civil societies in the various areas affected by climate change be able to seek resilience in the advent of severe destabilisation of political and economic institutional structures? In other words, how do urban communities (re)gain the ability to face growing challenges, even when safety nets from the state and the market are failing?

Under crisis conditions, politics-as-usual can even worsen the situation of some local communities, as illustrated by the accelerated

dismantling of public social housing in post-Katrina New Orleans (Flaherty 2010).³ As described above, future community resilience will require something different from the efficient and planned top-down solutions we are accustomed to in EU countries. It will thrive on a diversity of redundant, innovative, bottom-up, locally knowledgeable, self-organised and learning groups. Fortunately, examples of such movements and groups exist that may serve as a template for sustainability transition.

Recently, after government agencies and NGOs largely failed to assist the victims of Superstorm Sandy in the USA, which hit New York on October 29th 2012, a self-organised effort took the reins of the relief operations on the ground. An offshoot of the “Occupy” Movement, “Occupy Sandy”, organised a relief effort to assist the hurricane’s victims. Created as a partnership with local community organisations, it focused on mutual aid in affected communities, and eventually shifted from immediate relief to long-term rebuilding for more robust, sustainable neighbourhoods. This movement raised “more than \$1.5 million [and self-reportedly over 50,000 volunteers, and] became one of the most widely praised groups working on the storm recovery” (Nir 2013); yet it struggled to keep the characteristics of flexibility, self-organisation and responsiveness alive (Feuer 2012; Nir 2013; Shepard 2013; West 2013). The emergence of Occupy Sandy may represent a precursor to a more radical active citizenship catalysed by climate change. Similarly, Germany, in 2013, saw an increase in self-organised relief efforts, initiated by Facebook users, following the flooding of Dresden and Passau, among other areas (Kinzelmann 2013; Deutscher Bürgerpreis 2013). To understand this emerging phenomenon, however, and to transfer it to varying shapes and scales of future challenges, we need to look beyond cases of climate events and examine the precursors of Occupy Sandy.

Historical examples of severe crises (if not directly climate change related) have shown that context-specific forms of self-organisation allow creative and self-reliant tactics of adaptation and mutual aid, enhancing community resilience. The Global North may soon need to learn from experiences from the Global South, as Occupy has already started doing (Sitrin 2012). One such experience, which inspired later movements such as Occupy, emerged in Argentina in the weeks and years following the country’s economic collapse in December 2001. The movement known as “horizontalidad” (horizontalism) aimed to shape “directly democratic spaces”. It started with mass protests that brought on the resignation of the government. Horizontalism bypasses political parties, representative political

3. Hurricane Katrina only accelerated a privatisation trend carried out from the 1980s onwards with a perversion of multi-level governance in the form of an “alliance of a neoliberal government, nonprofits, community activists, and powerful real estate interests”, according to John Arena (2012), contributing to a growing environmental and social injustice. See also Johnson 2011.

processes and the State system altogether. Instead, it experiments and develops self-organisation through non-hierarchical networks of self-determined groups to meet local community needs (Sitrin 2006; 2007). Horizontalist practice sees equality as an ever-incomplete work-in-progress, whereby “everyone who participates has to take responsibility for continuously limiting power inequalities as they arise between participants” (Maeckelbergh 2013: 78).

Argentinian horizontalism has already influenced more recent experimental self-organised forms (in areas such as food, legal support and medical care) in social movements in the Global North, such as the “Indignados” movement in Spain and “Occupy” across the United States and Europe. These new movements are characterised by open learning processes that allow a radically innovative development of new types of knowledge and flexibility – a key feature of resilience. Sitrin (2007), borrowing from Wini Breines, talks of “prefigurative politics”, whereby the performed practice prefigures and embodies the desired society. They open up spaces of possibility for the empowerment and self-fulfilment of citizens in their individual lives – i.e. the personal dimension of sustainability (Seghezzeo 2009). According to Sitrin (2007), using argumentation dating back to Immanuel Wallerstein and Charles Tilly, Argentina’s economic meltdown provided “a spark that help[ed] begin the process of shifting ways of seeing and being” (47), i.e. a “shift in people’s individual and collective imaginations” (44) away from Argentinian clientelist democracy, and it initiated a redefinition of personal involvement and responsibilities. Most remarkably, these new movements “do not organize on the principle of ends and means given the importance of adaptability of process which enables the movements to change their objectives” (Sitrin 2007 : 49). In this, they develop qualities of serendipity that contribute to more resilient responsiveness (Kagan 2012: 36-38).

The Global North knows no comparably wide-scale developments of self-organisation. However, smaller-scale examples abound, which appear to be growing faster over the past few years and are engaged in the search for sustainability. Probably the fastest-growing contemporary European example is the Transition Towns network, gathering local initiatives working towards self-made solutions to live sustainably in a post-oil reality (Hopkins 2008; 2011). Started in the town of Totnes, UK in 2008, the network had reached 1,000 initiatives by 2012. Transition Towns offer a good example of prefigurative politics. They do not shun communications with public administrators and elected politicians, but keep them at a distance and do not condition

their own self-organised initiatives on public support. Other, often smaller-scale examples include intentional communities such as ecovillages (Andreas & Wagner 2012; Frémeaux & Jordan 2011), urban initiatives gathered under the “Right to the City” approach – e.g. in Hamburg (Kirchberg & Kagan 2013) – and initiatives sharing a pledge to sustain and (re)develop the “Commons” (Bollier & Helfrich 2012; Müller 2011).

An older example is the perhaps most widespread and radical network of sociopolitical and economic self-organisation, which emerged in yet another extreme crisis situation: the Spanish civil war (1936-1939). In Barcelona, surrounding Catalonia and parts of Aragon, the top-down Republican institutions practically vanished, leaving local groups to organise all aspects of social, economic and political organisation – as well as early fighting against Francoist military units (Dolgoff 1974; Orwell 1938). This process, which ran from July 1936 until mid- to late 1937, was not spontaneous, but rooted in several decades of activism, experimentation and attempted revolutions initiated by the Spanish anarchist movements such as CNT and FAI. These experiments were forcefully terminated through the Stalinist-influenced central government (from mid-1937) and soon after through the Francoist political regime (from 1939 onwards). However, at their peak, in year one of the civil war, they reached a historically unprecedented scale of societal, political and economic self-organisation that covered entire regions. These movements established institutions, such as local exchange systems and currencies for a re-regionalised economy, with a federalised network of 300 local currencies, thus including all four features of resilience: self-organisation, diversity and redundancy of currencies, and a “utopian practice” (Jamison 2012) opening up a bottom-up, alternative economic knowledge. This case also reminds us that efforts at a radical self-organisation in times of severe crisis are likely to be annulled or pushed back if re-established or newly configured top-down political regimes proceed to undermine them.⁴

One tricky but important question is what kind of political culture, or micro-level “polity conventions”, are fostered in different cases of self-organisation practices. How are different positions, perspectives, interests and worldviews from different participants dealt with? How is opposition overcome or maintained? Several of the self-organised social movements discussed above reportedly resort to consensus-based forms of deliberation. However, some authors have stressed the potential risks associated with consensus mechanisms, potentially causing self-censorship, peer pressure and

4. This risk is of course highest when a representative democracy in crisis degenerates into a totalitarian political regime. It is however also very present, and often experienced, within representative democracies.

in extreme cases, a form of “soft totalitarianism” implicitly imposed on potentially dissenting minorities. These authors stress instead the qualities of compromise-based deliberation, to develop forms of democracy that keep open the spaces of contestation (Kagan 2011: 439–444). Horizontalism as practiced by Occupy “involves incorporating conflict into the decision-making process ... leav[ing] room for multiple solutions and courses of action” (Maeckelbergh 2013: 79). If this observation is valid for the whole movement then the participatory modes of horizontalism allow a promising form of self-organised “polyarchic polity conventions” (Kagan 2011) to emerge.

Characteristics necessary for resilience are lacking to varying degrees under the largely top-down political regimes of highly technocratic multi-level governance in the Global North. As Occupy Sandy suggests, self-organisation may be already simmering, if not yet boiling, among the citizenry affected by early climate change. However, the examples above suggest that, in the Global South and to a lesser extent in the Global North, these resilience-enhancing characteristics are being developed in diverse forms of self-organisation under crisis conditions.

These practices develop a diversity of self-organised adaptive responses to crises, which do not emerge spontaneously but are inspired by both small-scale experiments and alternative types of knowledge: horizontalism gathered insights from the 20th century movements and theories such as anarchism and social ecology’s libertarian municipalism. Horizontalism also reflected critically upon earlier experiences from Argentina and took inspiration from other Latin American movements (such as the Mexican Zapatistas in mostly rural and indigenous Chiapas from the mid-1990s onwards, active in the self-organisation of e.g. alternative food, education and health systems). The year of anarchist self-organisation in the Spanish civil war was nourished by prior decades of libertarian self-education and social-experiential movements across these regions. The Transition Towns movement highlights the importance of alternative knowledge, as it builds upon insights from permaculture, “peak oil”, resilience and psychological research on addictions (Hopkins 2008; 2011).

Resilience requires a diversity of responses to crises. Therefore, in the coming age of climate change, with its largely unknown and probably regionally differentiated challenges, self-organisation should not take one single political form – it should have many faces. Even the co-existence of several such forms may be expected and desirable, increasing the resilience feature of redundancy.

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All these movements use network organisations, rather than staying isolated and scattered or relying on hierarchical structures. This encourages both a diversity and partial redundancy which “allow[s] for people to collectively coordinate multiple and divergent courses of action and produce multiple solutions to a problem” (Maeckelbergh 2013: 78), and a synergy between different areas of alternative organisation, “placing them in a larger dynamic of transition” (Rumpala 2013: 17). As Rumpala suggests, further networking of these initiatives would be a prerequisite to sustainability transition.

CONCLUSION

Facing barriers and limits to climate change adaptation, resilience thinking offers a perspective to understand phases before and after crossing thresholds. With global changes threatening especially urban areas, civil society is compelled to (re)gain the ability to address growing challenges and to pro-actively find new ways to increase resilience for settlements. Through the lens of resilience thinking, this article explored the potential of existing approaches at the level of civil society, drawing upon a variety of severe crises and emergent self-reliant bottom-up responses.

To increase resilience, four features are considered to play a major role in strategies for climate change adaptation: (I) response diversity, (II) types of knowledge and flexibility, (III) self-organisation and (IV) redundancy. The varying manifestations, operationalisations and declinations of these features, as described in the examples above, carry learning opportunities for social transformation. Self-organisation is the strongest of the features seen in the discussed examples, often stimulating development of the three other features. Self-organisation is not only a basic characteristic of the networks of living systems, allowing them to reach high degrees of resilience, but also an opportunity to change and improve the capabilities of an open society. Predominant institutional cultures influence the extent to which citizens are able to activate their inherent ability to self-organise.

These examples highlighted some of the conditions under which self-organisation can thrive or wither, such as the contexts of crisis situations, civil society’s resort to radical or pragmatic agendas, the modalities of participatory processes, the degree of networking and integration of social movements and the influence of an evolving institutional context. Political institutions have to choose whether they will passively witness (or even resist) these emerging

developments, or whether they will proactively support new forms of open citizenship. The further maturation of these kinds of movements requires opening up spaces of experimentation, where learning opportunities empower EU citizens, already ahead of a regime shift. A more active approach to fostering informal learning processes would empower citizens to transfer these competences – from mere awareness to lived praxis, and from single neighbourhoods to regions – crossing administrative and other borders. Only approaches that reach across spatial scales really deploy the potential for innovative solutions and precipitate transformation towards sustainability.

REFERENCES

- Adger, W. N., Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D. R., Naess, L. A., Wolf, J. & Wreford, A. (2008), Are there social limits to adaptation to climate change? *Climatic Change* 93(3–4): 335–354.
- Adger, W. N., Quinn, T., Lorenzoni, I., Murphy, C. & Sweeney, J. (2012), Changing social contracts in climate-change adaptation, *Nature Climate Change* 3(4): 330–333.
- Andreas, M. & Wagner, F. (eds.) (2012), Realizing Utopia: Ecovillage endeavors and academic approaches, *Rachel Carson Center Perspectives* (8): 1–151.
- Arena, J. (2012), *Driven from New Orleans: How nonprofits betray public housing and promote privatization*, Minneapolis, University of Minnesota Press.
- Bollier, D. & Helfrich, S. (eds.) (2012), *The wealth of the commons: A world beyond market and state*, Amherst (MA), Levellers Press.
- Brien, K. O., Hayward, B. & Berkes, F. (2009), Rethinking social contracts : Building resilience in a changing climate, *Ecology And Society* 14(2).
- Costanza, R., Graumlich, L., Steffen, W., Crumley, C., Dearing, J., Hibbard, K., Leemans, R., Redman, Ch. & Schimel, D. (2007), Sustainability or collapse: what can we learn from integrating the history of humans and the rest of nature? *Ambio* 36(7): 522–527.

- Coumou, D. & Rahmstorf, S. (2012), A decade of weather extremes, *Nature Climate Change* 2(March): 491–496.
- Deutscher Bürgerpreis (2013), Schnelle Hilfe aus dem Web: Preisträger des Sonderpreises “Hochwasser-Helfer” Deutscher Bürgerpreis 2013, Deutscher Bürgerpreis. <<http://www.deutscher-buergerpreis.de/wettbewerb/wettbewerbsjahr-2013/hochwasser-helfer/passau-raeumt-auf/>>, accessed 8 Feb 2014.
- deVries, Bert J. M. (2013), *Sustainability science*, New York, Cambridge University Press.
- Dolgoff, S. (ed.) (1974), *The anarchist collectives: Workers' self-management in the Spanish Revolution, 1936–39*, New York, Free Life Editions.
- European Environment Agency (2012), Urban adaptation to climate change in Europe: Challenges and opportunities for cities together with supportive national and European policies, *EEA Report*.
- Ernstson, H., Leeuw, S. E., Redman, C. L., Meffert, D. J., Davis, G., Alfson, C. & Elmqvist, T. (2010), Urban transitions: On urban resilience and human-dominated ecosystems, *Ambio* 39(8): 531–545.
- Feuer, A. (2012), Occupy Sandy: A movement moves to relief, *The New York Times*, 9 November, <<http://www.nytimes.com/2012/11/11/nyregion/where-fema-fell-short-occupy-sandy-was-there.html?pagewanted=all&r=1&>>, accessed 08 Feb 2014.
- Fischer-Kowalski, M., & Rotmans, J. (2009), Conceptualizing, observing, and influencing social-ecological transitions, *Ecology And Society* 14(2).
- Flaherty, J. (2010), *Floodlines: Community and resistance from Katrina to the Jena Six*, Chicago, Haymarket Books.
- Folke, C. (2006), Resilience: the emergence of a perspective for social-ecological systems analyses, *Global Environmental Change* 16(3): 253–267.
- Folke, C., Carpenter, S. R., Walker, B., Scheffer, M., Chapin, T. & Rockström, J. (2010), Resilience thinking: Integrating resilience, adaptability and transformability, *Ecology And Society* 15(4).
- Folke, C. (2010), How resilient are ecosystems to global environmental change? *Sustainability Science* 5(2): 151–154.

- Frémeaux, I. & Jordan, J. (2011), *Les sentiers de l'utopie* [Pathways through utopia], Paris, La Découverte.
- Hallegatte, S., Hourcade, J. C. & Dumas, P. (2007), Why economic dynamics matter in assessing climate change damages: Illustration on extreme events, *Ecological Economics* 62(2): 330–340.
- Holling, C.S. (1973), Resilience and stability of ecological systems, *Annual Review of Ecology and Systematics* 4:1–23.
- Hopkins, R. (2008), *The transition handbook: From oil dependency to local resilience*, White River Junction (VT), Chelsea Green Publishing.
- Hopkins, R. (2011), *The transition companion: Making your community more resilient in uncertain times*, Cambridge, Green Books.
- Intergovernmental Panel on Climate Change (2012), Summary for policymakers, In: Field, C. Barros, B. V., Stocker, T. F., Qin, D., Dokken, D. J., Ebi, K. L., Mastrandrea, M. D., Mach, K. J., Plattner, G. K., Allen, S. K., Tignor, M. & Midgley, P.M. (eds.), *Managing the risks of extreme events and disasters to advance climate change adaptation, A special report of working groups I and II of the Intergovernmental Panel on Climate Change*, Cambridge, Cambridge University Press, pp. 1–19.
- Intergovernmental Panel on Climate Change (2013), Summary for policymakers, In: Stocker, T. F., Qin, D., Plattner, G. K., Tignor, M., Allen, S. K., Boschung, J., Nauels, A., Xia, Y., Bex, V. & Midgley, P.M. (eds.), *Climate change 2013: The physical science basis, Contribution of working group I to the fifth assessment report of the Intergovernmental Panel on Climate Change*, Cambridge, Cambridge University Press, pp. 1–19.
- Jamison, A. (2012), Social movements as utopian practice, In: Jacobsen, M. H. & Tester, K. (eds.), *Utopia: social theory and the future*, Farnham, Ashgate Publishing, pp. 161–178.
- Johnson, C. (ed.) (2011), *The neoliberal deluge: Hurricane Katrina, late capitalism, and the remaking of New Orleans*, Minneapolis, University of Minnesota Press.
- Kagan, S. (2011), *Art and sustainability: Connecting patterns for a culture of complexity*, Bielefeld, Transcript Verlag.
- Kagan, S. (2012), *Toward global (environ)mental change: Transformative art and cultures of sustainability*, Berlin, Heinrich Böll Stiftung.

- Kinzelmann, F. (2013), Hochwasser in Dresden: Eine Stadt packt an, *Spiegel Online*, 5 June, <<http://www.spiegel.de/panorama/hochwasser-in-dresden-buerger-kaempfen-gegen-die-flut-a-903968.html>>, accessed 8 Feb 2014.
- Kirchberg, V. & Kagan, S. (2013), The roles of artists in the emergence of creative sustainable cities: Theoretical clues and empirical illustrations, *City, Culture and Society* 4(3): 137–152.
- Leichenko, R. (2011), Climate change and urban resilience, *Current Opinion in Environmental Sustainability* 3(3): 164–168.
- Maeckelbergh, M. (2013), What comes after democracy? *Open Citizenship* 4(1): 74–79.
- Müller, C. (ed.) (2011), *Urban Gardening: Über die Rückkehr der Gärten in die Stadt* [Urban Gardening: About the return of gardens in the city], Munich, Oekom Verlag.
- Morin, E. (2011), *La Voie: pour l'avenir de l'humanité* [The way: for the future of mankind], Paris, Fayard.
- Moser, S. C. & Ekstrom, J. A. (2010), A framework to diagnose barriers to climate change adaptation, *Proceedings of the National Academy of Sciences of the United States of America* 107(51): 22026–22031.
- Munich Re (2013a), Costliest natural disasters (overall losses), NATCATService.
- Munich Re (2013b), Significant natural catastrophes 1980–2012: 10 costliest events worldwide ordered by overall losses, NATCATService.
- Nir, S. M. (2013), Storm Effort Causes a Rift in a Shifting Occupy Movement, *The New York Times*, 30 April, <<http://www.nytimes.com/2013/05/01/nyregion/occupy-movements-changing-focus-causes-rift.html>>, accessed 08 Feb 2014.
- Orwell, G. (1938), *Homage to Catalonia*, London, Secker and Warburg.
- Rumpala, Y. (2013), Degrowth as transition: An exploration of prospects of realization and conditions of possibility, paper presented at the European Sociological Association 11th Conference (28–31 August 2013, Torino). <<http://yannickrumpala.wordpress.com/2013/08/20/degrowth-from-a-transitional-perspective/>>, accessed 6 Nov 2013.

- Shepard, B. (2013), From flooded neighborhoods to sustainable urbanism: A New York diary, *Socialism and Democracy* 27(2): 42–64.
- Sitrin, M. (2012), Horizontalism and the Occupy Movements, *Dissent: A Quarterly of Politics and Culture* (Spring), <<http://www.dissentmagazine.org/article/horizontalism-and-the-occupy-movements>>, accessed 6 Nov 2013.
- Sitrin, M. (2007), Ruptures in imagination: Horizontalism, autogestion and affective politics in Argentina, *Policy & Practice: A Development Education Review* 5(Autumn): 43–53.
- Sitrin, M. (ed.) (2006), *Horizontalism: Voices of popular power in Argentina*, Oakland (CA), AK Press.
- Smith, A., Fressoli, M. & Thomas, H. (2014), Grassroots innovation movements: challenges and contributions, *Journal of Cleaner Production* 63: 114–124.
- Tompkins, E. L. & Adger, W. N. (2004), Does adaptive management of natural resources enhance resilience to climate change? *Ecology And Society* 9(2).
- Walker, B., Salt, D., (2006), *Resilience thinking: Sustaining ecosystems and people in a changing world*, Washington, DC, Island Press.
- Wamsler, C., Brink, E. & Rivera, C. (2013), Planning for climate change in urban areas: from theory to practice, *Journal of Cleaner Production* 50: 68–81.
- Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (WBGU) (2011), *Welt im Wandel: Gesellschaftsvertrag für eine Große Transformation*, Berlin, WBGU.
- Weisz, H. & Steinberger, J. K. (2010), Reducing energy and material flows in cities, *Current Opinion in Environmental Sustainability* 2(3): 185–192.
- West, J. (2013), What happened to the money that Occupy Sandy raised? *Mother Jones*, 18 June, <<http://www.motherjones.com/environment/2013/06/occupy-sandy-once-welcomed-now-questioned>>, accessed 08 Feb 2014.
- Westley, F., Olsson, P., Folke, C., Homer-Dixon, T., Vredenburg, H., Loorbach, D., Thompson, J., Nilsson, M., Lambin, E., Sendzimir, J., Banerjee, B., Galaz, V. & Leeuw, S. (2011), Tipping toward sustainability: Emerging pathways of transformation, *Ambio* (May): 762–780.