Making the case for self-organisation: understanding how communities make sense of sustainability & climate change through collective action

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Abstract

Understanding how community groups take on the challenge of climate change is key to understanding the capacity of society as a whole to adapt in the face of climate change in ways that acknowledge a broader need for a sustainable societal transition. In order to show this it is important to identify what distinguishes self-organised responses to the climate change challenge from other responses. Through critically evaluating the existing literature on self-organisation and on locally based responses to climate change, the paper clarifies what we mean by self-organised response and then demonstrates how the concept would enhance the scope of research about local-level responses to enhance societal sustainability. Furthermore, the article presents an agenda for identifying self-organised responses to climate change and distinguishing self-organised responses from other forms of 'community-led' response.

Key words

Self-organisation, climate change, civil society, sustainability, collective action, communities

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1. Introduction

> "Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems" (IPCC 2015, 2).

Climate change arguably received a new impetus after the Paris Agreement negotiated at the COP21 in late 2015. The widely accepted view that climate change is a result of human activity over and above any natural climate variability forces societies and communities to both reduce their impact on the climate system and learn to live with the implications of changes to the climate system. Given the widespread consensus around this proposition it is something of a paradox that communities are the non-party stakeholders to international conventions on climate change (see UNFCCC 2015, 2). So while they are both part of the "problem" and part of the "response" they remain largely on the side-lines of decision making and scientific interest. Thus the article explores the concept of self-organisation as an approach to understanding how citizen communities come together to identify and articulate common interests and in the process organise themselves collectively to address climate change.

Self-organisation is a term covering the processes through which groups and communities in civil society learn to respond to climate change and fashion collective action responses as opposed to either market-oriented or government-oriented forms approaches. Seyfang and Smith (2007, p.585) argue "grassroot" activism is a neglected site of innovation for sustainability including innovation in response to climate change. Addressing climate change through self-organizing practices is an important component of understanding possible one part of societal responses. The central concern of this article is to further our understanding of how self-organisation can help develop an enhanced understanding of collective-induced societal transformations addressing the climate change challenge. The article is largely related to democracies in the Global North given that our own research is on societies located there and the conditions prevailing in such societies (e.g. a 'functioning' state and welfare systems) differentiate it from the Global South. Such societies also have developed traditions of democracy that ostensibly encourage 'voice' and have begun to encourage greater levels of community participation in local decision making, thus, at least in theory, creating spaces for self-organisation to emerge.

Firstly, we will clarify three different understandings of self-organising in the literature on social change for sustainability. Firstly the article seeks to distinguish different self-organised responses to climate change. Secondly, the paper takes the interdependent network notion of self-organisation and compares it to alternative conceptualisations of change in response to climate change. Thirdly, the resulting heuristic framework will be used suggest how local

collective responses to climate change might contribute to more general debates relevant to the field of climate change transitions.

2. Clearing the theoretical ground: What is self-organisation?

Ostrom et al (1999, p.278) note the concept itself is not new especially when it comes to managing collective (or common-pool) resources. However, we argue that self-organising is a key element in an open and non-linear process based on and mediated by "collective intentionality" (Hasanov and Beaumont 2016) through dynamic micro-level interactions with structural forces that operate as a potential driver for sustainable transformation of societies. We contend that prioritising governments or markets alone has not led to significant changes in adaptation to a sustainable future in general and more specifically to climate change and that the role(s) of local forms of collective self-organisation have been neglected (see Klein 2014).

The concept of self-organisation has been deployed within a wide range of academic disciplines from the physical sciences to social theory. There is insufficient space in this article to review all work on self-organisation; given this we will group and summarise this diverse body of work into three main categories that emphasise the accumulative layering of the concept. The literature on self-organising can be structured and framed under the following three headings: a "systems theory" stance; a social provisioning stance; and an agonistic pluralist stance.

Table 1 sets out the criteria which compare the conceptualisations of self-organisation: what are the *forms* of social organisation that the concepts are applied to; what are the *entities* being organised and finally the *research questions* the conceptualisations provide answers for. While there are some common elements, there are also important differences. These are ideal-type categories that provide distinct approaches to self-organisation based on drawing a distinction between approaches that are *objectivist* in their ontology (seeing self-organisation as something pre-given in relation to the actors/ agents being organised) and *constructivist* (seeing self-organisation as being constructed by those who are being organised). These ontological positions then have implications for how self-organisation is researched.

Table 1: Main conceptual positions on self-organisation

	'Systems theory' stance	**'Rational social provisioning' stance**	**'Agonistic pluralist' stance**
Social	Characterising emergent	Characterising emergent	Framing of social

organisation is applied to:	organising of systems. Systems might be closed or open.	organising of social systems (i.e. self-organisation). Systems can be open.	practices/ discourses (i.e. self-organising)/ governance
What is being organised?	Cellular automata/independent agents	Collectivities for social provision of collective (common-goal) goods	Activity, social action, communities of practice
Typical research questions	What are the rules that regulate relationships between automata?	What are the rules that regulate the relationships between agents? What are the conditions under which self-organising emerges?	Who decides to organise? Who is learning what from whom?
Examples	Neural networks, cities, economies, pedestrian flows, ant societies	Management of collective resources	Social practices, social movements

The concept of self-organisation as a systems theory approach is widely used in natural science fields such as physics, biology, chemistry and cybernetics (see Di Marzo Serugendo et al., 2004; Di Marzo Serugendo et al., 2011). Within this diverse field it is possible to identify a common set of ideas associated with an objectivist stance: in essence self-organisation refers to the spontaneous establishment of order in highly disorganised environments. Di Marzo Serugendo et al. (2004) point out that self-organisation emerges without explicit control from beyond the "system" being organised and the interactions between the components parts of the system guide the overall pattern as the system evolves dynamically in space and time (ibid, p. 2). The 'result' emerges from interactions within the system without intentional action.

Within spatial planning Portugali (2011) and Haken and Portugali (1995) exemplify this approach. Much of their attention refers to the domains of complexity and non-linearity. The complexity view considers cities and regions as dynamic systems where self-organisation indicates a system, which organises interplay without coercive (external) causes. The non-linearity issue focuses on the positive and negative feedback loops that exist in the ways that individual components relate to each other. Portugali (1997, 2000, 2008, 2011) argues cities are self-organising systems comprising various spatial layers, such as infrastructure, built environment and free agents, and that those layers are in constant interaction. However this is all consistent with understanding self-organisation within a pre-determined hierarchy of spatial scales. Self-organising can modify the urban structure but it does not change the rules by which urban governance is played out, in other words it does not bring into question the meta governance (see Jessop 2002; Kooiman 2002) of the system.

The social provisioning stance on self-organisation develops a second layer to being self-organised. Fuchs (2002) asserts that self-organisation maintains a structural logic, which allows re-creation within social systems. Self-organisation 'involves the permanent (re-)creation of new structures that influence individual thinking and actions' (ibid: 3). Additionally, Fuchs (2006) outlines two conceptual forms of self-organisation: it exists in all societies and all systems that involve human interaction; and it relates to the democratic dimension of inclusive and cooperative processes that emerge in social interactions. Social interaction, from this perspective, incubates information sharing and social learning that leads to collective action and creation of "social capital" (Bourdieu, 1977; Putnam, 2000). Accumulation of social capital is largely understood as the result of negotiation and bargaining processes in collective action strategies (Ostrom, 1990). Since negotiation is a process of reaching common ground with specific aims, needs and viewpoints, self-organisation is neither a spontaneous occurrence nor is it a deterministic element of social systems – it is the result of conscious social action. As a result, trust based on direct communication in face-to-face contacts is transformed into trust in the organization" (Rothfuß & Korff 2015, p.159).

Clearly much of the literature on (urban) self-organisation refers to developments in complexity theory and organisational science. From a similar, albeit somewhat different perspective, Boonstra and Boelens (2011) suggest that self-organisation denotes the capacity of civil society to set up and maintain initiatives without the help of government. Their theoretical assumption is that self-organisation represents a mixture of human behaviour and action in emergent systems and the projection of this behaviour in actor-network relationships. Found in the complex balance between systems and networks, self-organisation is an 'independent form' of public participation that originates outside yet also evolves together with institutional structures. These perspectives represent attempts to characterise self-organisation as a conscious form of social action operating within and interacting with complex systems having the potential to bring about change in those systems (Zhang et al., 2015, p. 161).

We argue that conceptualisations of self-organisation in the existing objectivist literature is focused primarily on the changes occurring at the level of the system and tends to underestimate the role of human agency and (social) action from "below". The appeal of self-organisation for contemporary practice rests on its incorporation of innovative and unorthodox inputs in a field of research that has largely been dominated by objectivist approaches. In our view self-organisation represents not only a sign of structural change in the operations of governance systems but it also needs to be investigated through the prism of social action, social framing and social learning, in every-day situations, within

communities (of place and/or interest) and manifest in a collective manner. In other words it requires a social constructionist approach that recognises the importance of 'action', inter-action and learning (in both an individual and collective sense) as well as an acknowledgment of how the issue of climate change in understood, problematised and acted upon locally.

Self-organisation also poses a challenge to existing forms of governance and an alternative to them. The issue then becomes how does self-organisation relate to established systems of governance? There is a vast literature on governance which we lack the space to review here but generally speaking the notion seeks to describe and understand changes in the process and meaning of governing, emphasising network forms of governance in multi-actor arrangements and processes of self-governing (see Kooiman 2002, pp.71-73). Thus governance is a way of coordinating social action structured around vertical, horizontal and cooperative mechanisms in contrast to traditional state intervention and control from above. In general terms *governance* denotes changes in the institutional arrangements for the coordination of action (Newman 2001, p.26) in which the role of government in the process of governance is contingent (Pierre and Stoker 2002, p.29). However, given the different uses of the concept in various national and political contexts we need to bear in mind the point made by van Kersbergen and van Warden (2004) that *governance* provides a linguistic frame of reference that allows us understand complex patterns of collective action and changing processes of governing that include a variety of forms and methods of coordinating action (e.g. hierarchical, horizontal).

In order to go beyond this general approach the literature has developed the notion of three different governing orders. Here we refer to meta governing, first order governing and second order governing (Kooiman 2002). Meta governing refers to the formation of general or policy-"specific images" and is based on a form of public deliberation. Meta governing and the development of "images" entails the establishment of a "language" of problem definition along with associated forms of action which are binding through "ethical standards" (Kooiman 2002, pp.87-88). This entails the construction and normalisation of assumptions about causality and ways of dealing with issues that become defined as 'problems'.

First order governing refers to what might be termed the "sphere of action" in which the structuring effect of meta governing sets limits on the action options available. Thus we are in the arena of policy implementation in which public organisations encounter those addressed by a specific policy. Second order governing is concerned with institution building and the establishment of policy instruments/programmes and is best represented by forms of parliamentary participation and associated interest group activities which play a key role in

second order governing.

How then does self-organisation interface with governance and these different governing orders? Given the nature of what we are suggesting about self-organisation as action "from below" it might seem that it has little to do with meta governing. However, it is precisely through the emphasis on deliberation and the creation of "specific images" and an accompanying language of problem definition that self-organisation has the potential to simultaneously interface with meta governing and challenge and subvert it through the creation of alternative "images" and languages of problem definition. In terms of first order governing self-organisation offers alternative ways of doing things – once again it has the potential to both complement and challenge existing policies by offering alternatives. It is perhaps in the area of second order governing where the role of self-organisation is most likely to be absent because this is the arena of "traditional parliamentary politics", and it is here that such forms of organising are least likely to be active, partly because of their specific local nature but also because they likely to lack the traditional means to act in this arena.

The existing literature on self-organisation offers a number of different stances: (1) self-organisation is about how localised organising develops and relates to organising at different 'levels'; (2) self-organising is about how engaged individuals make sense of the process of being organised; and (3) it is about framing social practices within self-organising processes and about how issues of power are resolved. Not all conceptualisations of self-organising include all three aspects. For example system theorists tend not to be interested in the issue of who has power and who decides to be organised. Moreover, self-organisation has implications for governance and, potentially, offers new ways of "governing from below" that reflect local concerns with and understandings of problems. In the next section we will set out how our concept of self-organisation can complement and develop existing work on climate change responses.

3. Understanding collective responses to climate change

Climate change may be a particularly fruitful arena to explore the ways in which self-organisation occurs, because governments and markets are either unwilling or unable to respond to the challenges that derive from the problem of climate change. The concept of self-organisation, however, has not been used explicitly in research on climate change responses to explore and understand how people and places collectively adapt to climate change. We have argued that self-organisation is potentially a useful heuristic device for understanding the processes of change and adaptation. It is, however, apparent that related and synonymous

concepts have been deployed to understand the processes involved in responding to (perceived) climate change and its effects.

Here we use a revised version of *Table* 1 that retains only the social science objectivist and social constructivist stances on self-organisation. In order to offer a simplified map of the literatures on climate change adaptation we will use the four-fold categorisation offered by Smith (2017). Smith (ibid.) outlines four bodies of literature on climate change adaptation: the systems theory approach; the socio-technical transition school; the social practice approach; and the urban politics body of work (see *Table 2*). Each of these explains climate change adaptation from different conceptual perspectives. The key issue relates to how these bodies of work might be categorised and understood using the concepts presented in *Table* 1.

The relationship between self-organisation and climate change adaptation from a *systems theory* perspective perhaps offers the simplest understanding. This perspective, exemplified by Brooks and Adger (2005), understands adaptation as occurring when a certain number of preconditions are present to frame micro-level interactions. Adaptation might involve fiscal incentives or the presence of social capital in certain localities. Here concepts of self-organisation such as understanding the micro-level feedback loops and interactions between 'cellular automata" (such as individuals, households or communities) can conceivably lead to an altered macro-level structure (of society or the economy). Here the self-organisation agenda might focus on the adaptive capacity of particular local groups or explore the attitudes and responses of individuals to particular sets of fiscal and behavioural incentives.

It is possible to identify a broader more nuanced understanding of self-organisation in the *socio-technical* school of thought, or Strategic Niche Management (SMN) on climate change adaptation. The socio-technical school, exemplified by Schot and Geels (2008), focuses on the ways people interact with technology, often infrastructural such as heating systems or energy generation technology. Their approach conceptualises interaction as taking place at multiple levels: a "landscape" level, a socio-technical regime level, and at the level of localised consumption – thus the Multi-Level Perspective (MLP). Change relating to any particular technological regime emerges from the interactions between these multiple levels. Equally change in the overall regime is understood as resulting from innovation within localised "niches" of consumption that then de-stabilise the wider regime over a lengthy period. While writing on transition through socio-technical regimes started from a focus on the strategic management of change, and this goes against the grain of the self-organisation literature (where change and challenge are spontaneously developed from within), their more recent considerations of how localised niches understand what they are doing is compatible with the notion of self-organisation arising from civil society. Thus more recent SNM literature recognises the

significance of such actions, for instance Schot and Geels (2008, p. 538) argue:

> 'SNM as a policy tool does not suggest that governments create niches in a top-down fashion,…but focuses instead on endogenous steering, or steering from within. Such steering can be enacted by a range of actors, including users and societal groups…Niches are not inserted by governments but are assumed to emerge through collective enactment.'

One can infer from this that such forms of SNM constitute a form of reflexive governance that is *in effect a form of self-organisation*. Clearly this literature is seeking to acknowledge and integrate into its analysis the role of agency, power and problem definition/ construction (see also Geels, 2011). However, we would argue that notions such as "reflexive governance" and power largely function as a set of *deus ex machina* and are not fully integrated into the analysis, remaining underdeveloped in terms of their theorisation and analytical utilisation. Nor does it seem to us that actions emanating from communities are, as yet, a central part of their research agenda (see Seyfang and Haxeltine, 2012, for an attempt to rectify this).

An objectivist approach might investigate the rules and social norms under which technological and process innovation become possible in localised niches. Such a view might also explore the degree to which localised niches can be strategically managed, although this raises a series of definitional issues as to whether a localised niche strategically managed from without would constitute a self-organised entity at all. A more constructivist view would seek to develop an understanding of how local agents (within localised pockets of innovation) make sense of climate change and how they respond to this through their use of technology. Ultimately the processes of social learning and framing potentially unsettle the wider socio-technical regime.

The social practice theory (SPT) approach (see Shove and Walker, 2010) offers the potential to address the issues self-organisation. While acknowledging the role of wider structural forces, SPT focuses on the "practices of everyday life" and how they are embedded in mundane routines, which are, often unconsciously, produced and reproduced. This "unconscious reproduction" (or what might be termed 'habitual reproduction') is dependent upon wider systems of production and consumption and represents a source of their "power" and of the perpetuation of both sustainable and unsustainable practices (in an environmental sense). The focus here, in contrast to the multi-level perspective of SNM, is on "…the horizontal circulation of…the 'elements' of practice…'" (ibid.,, p. 472).

For SPT the key idea is that the practices of everyday life are framed and therefore made sense of through community-held understandings of what is appropriate. Local agents operate with frames through which they enact social practices related to climate change response, such as

walking rather than driving, buying and growing local food as opposed to buying commodified food products. Here the notions of "social norming" and "social learning" converge with the constructivist self-organising literature, with the frames of social practice influencingat can be changed and the lessons that are un-learnable. The self-organisation element is the focus on localised interactions between actors and between actors and the frames that influence social practice. If, in the language of a long-standing debate, SNM may be situated more in the domain of "structure", SPT sits more within the "agency" domain. There have indeed been attempts to bring these two approaches together (see Hargreaves et al., 2011) in order to address weaknesses in both.

Table 2: How self-organisation offer insights into climate change adaptation

	Objectivist social science stance	Constructivist social stance
Systems theory understanding (e.g. Brooks and Adger, 2005)	How much social organising (social capital) is required to enable adaptation? What incentives required to enable adaptation?	No examples identified
Socio-technical understanding (e.g. Schot and Geels, 2008)	What are the rules that permit/ forbid innovation? Can localised consumption niches be strategically managed to enable wider transition?	How do local agents make sense of their use of technology in relation to the climate change issue? How to local agents (un-)learn and understand social norms?
Social practice theory (e.g. Shove and Walker, 2010)	No example identified	How do local agents/ practitioners make sense of their social practices? What can't be learned?
Urban politics (e.g. Betsill and Bulkeley, 2006)	How do communities of communities emerge? What is most effective combination of participation/ deliberation?	Who decides what climate change responses should be? Who decides on who decides? Who should benefit?

The *urban politics* theme is the widest and most diverse of the four in *Table* 2 and has been the heterogeneous frame through which a suite of environmental activist issues have been considered. The main focus for climate change adaptation under the banner of urban politics is on the identification of "problems"', the power relations apparent in the definition and resolution of such problems (such as climate change) and the governance structures through which responses are decided. Patterns of exclusion resulting from power relations, valorisation of knowledge and expertise have to be challenged and modified, e.g. the hierarchical distinctions between scientific and other forms of knowledge such as everyday and local knowledge (see Atkinson and Klausen, 2011, Atkinson et al., 2011), to allow for collective and autonomous forms of decision-making about the future development of society. This form of societal change

requires and gives rise to organisations that enable the articulation of interests within the public sphere and the creation of supporting social and economic practices, such as self-help, mutual cooperation, business networks, informal sector, and so on. Accordingly, various orders of governance (local, national and international) have to interface with these organisations. This interplay requires what is widely described as multi-level governance or as the transitions literature terms it a multi-level perspective (Geels, 2011). However, self-organisation has not been central to this literature, tending to function, at best, as an "add-on" rather than as a crucial process for transition towards real (instead of a symbolic and virtual) citizen's participation that enables local engagement in the construction of goals, visions and action.

4. A heuristic framework of self-organisation

In what follows we present a heuristic framework of self-organisation, which goes beyond the traditional political process of citizen representation, the aim is to draw attention to processes taking place within everyday life that shape and negotiate the urban and regional sphere. In other words, how citizens directly (and indirectly) bring about societal change and transition through their own activities adapting to (to proximate climate change) conditions, making use of and creating opportunities, innovations and so on. While these activities are often linked to both political and planning processes they often follow a different logic derived from local conditions and the associated locally embedded ways in which problems are framed. Moreover, the issue of how something becomes defined as a problem and acted on is by no means obvious. As Atkinson (2000, p. 214) has argued for something "…to be defined as a 'problem' it needs first of all to be constructed and articulated as an object amenable to diagnosis and treatment in and through a narrative discourse which carries with it an 'authority' i.e. to develop a narrative which will be 'listened to' and heeded.'

We propose an agenda on researching self-organised responses to climate change that focus on six key issues:

1. Understanding the dimension of meta-governing (after Kooiman 2002) whereby self-organising potentially challenges the rules by which day to day governance (first order) and the rules of day to day governance (second order) are decided. In particular this is about questioning the hierarchy of governance set by the state and/or by markets. Here self-organisation is not about participating as such but about changing the rules of the game (the meta governance component) to create societal transition at large;

2. Understanding the processes of becoming a self-organising community with particular emphasis on the social learning/unlearning that takes place within emergent and established communities. This contrasts with forms of organisation and cooperation that are based upon rational economic ends;
3. Understanding spontaneous ("disorganised") forms of social action based on "trial and error". Here there is the space to consider innovation (and conservation) in self-organising communities. This dimension focuses attention on the capacity for spontaneous (and anarchic) social action which contrast with the traditional focus within first order governing;
4. Multiple and multi-dimensional aims and objectives that are framed and integrated together through the process of becoming organised. Such a focus on multiple aims and objectives emphasises the role of spontaneity and innovation in framing both the nature of the climate change response and the ways in which "becoming organised" are played out. It also implies a focus on how groups and communities can live with dissonance and contradictions between multiple aims and objectives;
5. Pluralistic engagement stressing the need to identify and track the distribution of power within a self-organising entity rather than that more traditionally found in second order governing based around parties and interest groups. The challenge of self-organising is to decentre power as opposed to top-down approaches dominated by a small elite; and
6. The construction of scale and proximity or perhaps the managing of bridging and bonding within and between groups and ecological initiatives. Territorial scale is one area that may be open to re-construction by self-organising groups and may be one source of innovative practice within self-organising groups.

We would like to point out further, that these key issues are constitutive for self-organising for several reasons. First, self-organisation offers a heuristic device to focus on the processes of social norming, social learning and social transitions within the climate change debate. Second, it focuses on the linkages between localised discussions and framing(s) of climate change in relation to the transformation of human societies as a whole (across multiple spatial and scalar levels). Third, it potentially offers a way of engaging with previously "silent" voices, allowing them to be "heard" in the climate change debate, either directly (through invitation) or through a critique of existing governance frameworks and action. Fourth, the concept of self-organisation introduces a human perspective and places a greater emphasis on the (face-to-face) agency of individuals and communities: the very act of focusing on self-organisation is an implicit critique of current (instrumental) modes of societal organisation and contains the potential to open up normative pathways to the "good life" and the "just city" (Amin, 2006, Fainstein, 2011), as well

as more progressive climate governance (Bulkeley, 2015). Finally, it means we are dealing with 'small scale' processes that generate possibilities for (local) collective action at multiple scales of interaction.

5. Planning and self-organization

Planning in relation to climate adaptation for instance has traditionally been based on an instrumental, apparently apolitical, rationality, in the sense of selecting the most appropriate means for reaching a defined end. While portraying itself as "apolitical" planning is deeply embedded in a wider system of institutional and power relations that structure its approach to the identification of relevant issues to be addressed and problem definition as well as what are considered to be 'appropriate forms of action'. This embeddedness has tended to be "top-down" and has served to marginalise local understandings, knowledge and action. And despite the so-called "collaborative turn" in planning (Healey, 1996, 2002), and public policy more generally, planning remains deeply enmeshed in established politico-institutional systems (on the uses of knowledge in urban contexts see Andersen and Atkinson, 2013). As Boonstra and Boelens (2011, p. 106) point out "…participation is always based on the idea of a conflict between the *powerful and the powerless*, in which the powerful determines the procedures along which the powerless shall participate." Here problems continue to be defined from a governmental perspective as they set the conditions for participation to address previously defined problems with officially prescribed solutions and forms of action embedded within them.

We should note that there is another dilemma facing local forms of self-organisation, which is particularly relevant to an issue such as climate change that has a global dimension. Arguably to be successful one of the ultimate aims of local forms must be to transcend localism and move towards a "community of communities" with the objective of creating forms of societal collective governance than can address the wider dimensions of climate change at national, international and global scales. While a range of networks exist (e.g. The Climate Action Network, Ecosystems and Livelihoods Adaptation Network, The NGO platform for Climate Justice, C40 Cities Climate Leadership Group and the Cities for Climate Protection program) they are best described as fragmented and embryonic. Indeed some remain 'elite dominated'. Moreover, as things currently stand the vast majority of locally based self-organised climate change groups are largely unaware of them or lack the capacities/resources to engage with them. Thus making even mutual learning difficult and 'concerted action' unlikely. This, arguably, represents the greatest challenge to self-organised responses and allows state and market based forms to dominate at the national and global scale.

In terms of the governance approach discussed earlier, self-organisation needs to be present in the sphere of meta-governance in order to fulfil the essential needs for adaptation to and mitigation of global environmental change. As meta governing is concerned with how political authorities are involved in promoting and guiding the self-organisation of governance systems through rules, values, organisational knowledge, political strategies and institutional tactics (Jessop, 1997), the interface between meta governing and self-organisation is problematic. The problem from a meta governance perspective is that traditionally the emphasis has been placed on hierarchical systems and more recently on the role of markets and networks. Thus self-organisation, particularly from "below", has tended not to feature in these debates. We contend that it is necessary to redress this imbalance in research and practice vis-à-vis climate change.

Self-organisation therefore presents a challenge for conventional modern governance systems. By definition, the concepts of self-organisation and governance are antonyms. However, despite this both concepts have, in the recent years, increasingly been brought together in the guise of "urban governance" which can be seen as part of first order governing (i.e. where things are done). Zhang et al. (2015) argue that self-organisation and intentional planning are the two sides of the same coin, and position self-organisation between the dynamics of micro-, meso- and macro levels of governance. Self-organisation represents not only a break in the system but also a change in the social institutions and the rules of the game. In other words, self-organisation is not only about individuals' capacity to form collectives but it is also about accommodating local community initiatives in the wider institutional context. What remains unknown, however, is the "game" (and the "rules of the game") at the interface between the process of self-organisation and institutional aptitude of governance structures to adapt to these new situations.

There are clear intersections between the literature that focuses on self-organising and the literature that focus on adaptation to climate change. For the most part an agenda situated in and around the self-organisation literature focuses on localised relationships and how local agents come to "know" about and understand the nature of the climate change problem and how multiple local sites of adaptation might interact.

By utilising the concept of self-organisation we wish to draw attention to how citizens directly affect societal change through the development of their own (local) adaptation strategies to the conditions of climate change, how do they create and make use of opportunities (Nederhand et al, 2014; van Meerkerk et al, 2012). This requires a focus on everyday life practices, which form the basis for collective action and have the potential to create flatter, less hierarchical organisational structures by drawing on face-to-face relations between individuals. We argue that what is required is an approach that pays more attention to intentionality and resonance

of the involved individuals (see Rosa 2016). The next, crucial step, is to find ways to 'up-scale' these self-organised forms without losing their radical implications as they interface with state and market forms of organisation.

4. Conclusion

We have considered approaches to self-organisation and have identified three: (1) one focussing on the systemic contribution of self-organising that allows wider social, economic and environmental structures to emerge from the autonomous activities of small groups; (2) a body of literature that looked inside the 'black box' of small groups to consider the way in which members of groups balance the benefits and dis-benefits of self-organising for the provision of collective (common goal) goods and services; (3) finally self-organising as discursive engagement with what it means to be organised and how to frame issues of interest to the self-organising entity. While each of these approaches adds something to the narrative of being (self-) organised we argued that the more discursive approach to self-organising offers potential insight into how societies and economies might be able to fashion some kind of transition in the light of climate change. The discursive form of self-organising also brings with it a set of research methodologies associated with social learning and cooperative inquiry that can add new insights to our understanding of self-organising. The counterpoising of "bottom-up" self-organisation and "top-down" conceptions of how society is organised and change/transition brought about, while a simplification, serves to highlight the differences between self-organisation and other more established modes of governance and organising based on the state and market(s) and to bring out the implications of these different ways of organising.

Locally based forms of self-organisation pose a challenge to dominant ways of 'doing things' and traditionally states have sought to 'neutralise' such challenges by 'co-opting' them by channelling them into modes of organising and ways of acting that are congruent with existing political forms of organisation. Similarly markets, while professing to respond to individual (or consumer) preferences are only capable of responding to demand as expressed through 'price' signals. Self-organisation eschews both forms and thus represents a different mode of action based on notions of the citizen as an active creator, located within specific spatial configurations and responding to climate change as a locally encountered and experienced phenomena. The challenge is then how to go beyond these specific spatial configurations and actively engage with and shape the global debate and action to climate change to reflect their needs and aspirations.

Given what we have argued in the above one final point needs to be made. Self-organisation should not be seen as a “magic bullet” that will somehow provide the “solution” to all of society’s problems including climate change. It offers the potential of developing new approaches to climate change rooted in local contexts and understandings of how climate change impacts on those localities. But by itself it will be unable to resolve the problem for the basic reason that climate change is a global problem and that multiple, highly differentiated, localities will frame and respond differently to the problem. It is not simply a matter of aggregating the multiplicity of local responses to produce a ‘global solution’; what is required is a new articulation of different sectors (state, market and civil society) at different scales over time to create a global response that provides genuine alternative to current responses. However, this will entail a revisualisation and reframing of the relationships between the sectors and their internal structures and organisation across time and space.

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