



Architecture and Resilience on the Human Scale: Ethical and political concerns, agencies, co-production and socio-technological strategies in research and practice

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Introduction

Resilience will be a defining quality of the global 21st century. As we approach the unknown and unpredictable effects of climate change, and the multiple challenges of resource depletion, loss of welfare and economic crises, we know that our current ways of living are not resilient. Our urban infrastructures, our buildings, our economies, our ways of managing and governing are still too tightly bound to models of unrestrained free-market growth, individualism and consumerism. Research has shown that the crises arising from climate change will become increasingly frequent and increasingly severe. What is also known is that the effects of climate change are not evenly distributed across places and people, and neither are the resources needed to meet these challenges. We will need place specific responses that engage with, and emerge from, citizens ourselves.

This is the Sheffield School of Architecture's position paper that accompanies the 'Architecture and Resilience on the Human Scale' conference, held in Sheffield (UK) 10th-12th September 2015. The conference focuses on research, spatial strategies and projects that are testing how we can build local resilience in preparation for major societal challenges such as climate change, scarcity of resources, increases in extreme weather events, shifts in demographics and so on. We are interested in discussing how architecture, urban practices and related fields can make a transformative contribution at a neighbourhood scale. We are also stating that architectural thinking has the strength to allow a cross disciplinary stitching across the conventional silos of humanities, social sciences, arts, science and technology, and also across research, practice and civic activism, such as the papers in this conference demonstrate.

How then, can we help build resilience? Can we do it through new forms of design? Through new social and technical innovations? Through new economic models and forms of collective governance? Through new research methods and engaged practice? What professional skills are needed to do it? As we approach uncharted territory, we need new models of living, working and designing to help us.

Amidst these discussions, and recognising that there are numerous other components that also need to be developed, this position paper does not intend to offer a totalisation of views on resilience but takes a situated approach (Haraway, 1988) to explore some key aspects that have focus the debate in the school in the last years;¹ namely, the possibilities of architecture and architectural research methodologies to contribute to building resilience, specifically by maintaining an ethical and political engagement dimension to it. The *locatedness* of practice forms an important aspect of this ethical and political engagement, as well as understanding the 'local' as an accessible, unmediated scale for civic action.

Secondly, the paper focuses on co-production as a key component for resilience activity on the human scale. Whilst this is one standpoint amongst many, we recognise that university-community partnerships and notions of "co-producing research" have been increasingly on the agenda, with the belief that knowledge needs to be directed and created with those who need it most. In the field of architecture and planning, this follows a longer tradition of participation and signals not only a move towards ethical forms of knowledge production but new opportunities for collective action in making the city. SSOA has chosen to explore co-production as a fruitful territory for linking research and practice. Also the notion of 'agency,' which characterises this active position and the multiplicity of relations that need to be considered in resilient practices is of importance here.

Thirdly, it is in recognition that the built environment, in both its processes of construction and use, is responsible for industrialised, large-scale ecological damage. It is from the impacts of CO2 emissions on climate change, to the effects of deforestation and mineral extraction, excessive water footprints (and more) that the paper posits questions around how to mediate the effects of climate change without recourse to those technologies and means that worsen it. Contemporary advances in architectural sciences and technology enable us to be armed with information to change these circumstances, and is a crucial location for action.

Architecture and resilience: critical, political and ethical approaches

Resilience has moved from being a radical term in ecology, permaculture and grassroots movements (Hopkins, 2008) to something like a catch all which "has become the preferred means of maintaining business as usual." (Diprose, 2015: 44). It is a term that in recent years has been defined by governments and experts, externally to the communities, who should "become resilient" (MacKinnon and Driscoll Derickson, 2012). A simplified definition of resilience as simply 'being strong' or 'bouncing back' is used ubiquitously, from describing a football team's victory, workers' capacities to manage stress, to the Bank of England and chancellor George Osborne's primary objective to deliver a 'resilient economy'². This ubiquity is potentially due to the fact that 'resilience' itself, does not say anything about what



is good or bad; it says nothing of the political and ethical implications or motivations for action. With cities rapidly adopting resilience as framework to shape development, it is crucial to question, as underlined by Adriana Allen here, the relationship between injustice and resilience. Allen asks if cities' new resilience enhancing measures have pre-existing injustices embedded within them? (Allen, this volume) As other papers in the conference demonstrate resilience on the human scale should focus on dimensions of political ecology (Gibson, this volume), such as justice, nature and time, issues of intergenerational equity and 'ecological economics' (Faber, 1998; 33).

Whilst resilience is potentially a transformative concept, it is a term that has been 'turned upside down.' For this reason, its usefulness in development has been questioned, with journalists noting that it has become essential to an organisations' survival to frame whatever it is they do *as resilient*. If we strive in whatever capacities we can to make transformative contributions, then **resilience needs to be reclaimed, reframed and practiced in radical and critical ways.**

Resilience, as it was developed in systems thinking emphasised certain qualities that make a system resilient, such as diversity; redundancy; connectivity; continuous learning and experimentation; high levels of participation; and polycentric governance (Biggs et al. 2012). These are potentially transformative concepts when thinking about urban locations and development. How can we have, for instance, diversities of tenure, ownership and inclusive access to housing (Pickerill; Montelongo and Wittek; Giorgi, Manzoni and Cattaneo; Glatz and Komlosi, all this volume)? What kinds of diverse economies are being performed (Gibson, this volume) and non-market forms of collectivity and participation (Elzenbauer and Franz; Moore and Bennett, *ibid*)? Could we have a diversity of not only energy sources, but also modes of their control and management (Rahimian, Domenica lulo and Llach, *ibid*), and what is in fact a diverse, creative and participative future for energy? (Tyszczyk and Udall, *ibid*). Similarly, supporting the 'redundancy' of a system requires a different approach to thinking about investment, and how we invest in people and places. Does resilience 'at a human scale' suggest supporting a citizen's income (Trojal, 2014) or new roles for local services in citizen led production (Thorpe, 2014)?

In the field of urban resilience, there has been a recent focus on universities working with cities at an infrastructural level³ but the scale of the neighbourhood, as the "building block of cities" has received less attention (Moulaert et al, 2010). Recent research has suggested that place based approaches and design methodologies are key in building resilience. Researchers have highlighted a particular need for "placemaking [...and a] basic infrastructure of public spaces" in building neighbourhood resilience, especially in areas

under socio-economic stress with retrenching local authority services (Platts-Fowler and Robinson, 2013). Others draw attention to the ways that 'design thinking' as a synthesising process, and their participative strategies are also key to building resilience (Waterloo Institute of Social Innovation and Resilience, 2012).

A significant part of SSOA's research, practice and teaching (and indeed a topic for this conference) engages with issues of locality and neighbourhoods. (The Building Local Resilience research platform and the Live Works teaching enterprise at SSOA make explicitly this statement in their programme) It is in recognition that, not only can ecological loops be closed effectively at this level, that new material infrastructures can be made and claimed by citizens, but rather advocates an engaged approach. Recognising that architecture is *located somewhere*; it is in these places where change happens with people. In the age of climate change and peak oil, resilience requires qualities of 'social capital' – trust collaboration, cooperation and leadership- which is rooted in the place where people live (Lewis and Conaty, 2012; 26). In its more radical and critical formulations, it is the only way transformative resilience can really be achieved (Petrescu, this volume). Whilst policy frameworks are of course important, it is through the spatial, social and community practices *on the ground* that resilience is made.

We aim to recognize this more immediate form of engagement in the growing global context of mega-developments⁴, whose 'bigness' is not only a scale unto itself, as Koolhaas famously stated a few decades ago (1998), but is a contemporary condition for modes of production, delivery and final inhabitation, which are not resilient.⁵ This conference has been designed to foreground the 'local' and the 'neighbourhood' as the location which can specifically facilitate citizen action and participation. Importantly, this human-scale is the one most immediately perceptible to us at the level of everyday life. It is a key and essential location from which *resilience takes place* and has meaning. More autonomous communities are seen as the true 'resources'⁶ for ecological transition and urban resilience (Lewis and Conaty, 2012; 28) and significantly it is the scale where democratic governance can take place (Hirst, 1993).

This focus on 'the local,' as contributors here highlight, does not mean 'localising' structural problems. Rather it is one location from which to challenge and transform them. We need "resilience from below' [and to consider...] how resilience may be associated with ideas of rights, power and agency" (de Carli, this volume). Some of the papers here address this directly; Santacruz for instance, raises the indigenous rights of the Cheran (Mexico), who have moved from resistance and self-defence, to self-determination and self-government for autonomous material and social resiliency. Other key issues raised here include the rights to inclusive, affordable housing (Pickerill, *ibid*), with others raising questions around common property and collective action (Montelongo and Wittek; Giorgi,



Manzoni and Cattaneo, *ibid*). Authors pay particular attention to low-income groups and vulnerable inhabitants (de Carli; de Biase and Petrella, *ibid*), and to the collective agency of those in informal settlements (Paramita and Schneider, *ibid*). Following Lefebvre's argument for the 'right to the city' (Lefebvre, 1995), we need to create the conditions for a 'right to resilience' (Petrescu, this volume), with projects initiating and sustaining grassroots self-organisation and management, creating new social and economic agencies for citizens (Gibson, *ibid*), as well as new roles for architects, other professionals and local actors (Merrett; Grau, Schoenert and Carpaneto; Moore and Bennett, *ibid*).

The sustainability of collective actions is also important here (Montelongo and Wittek, this volume), with others analysing the intangible qualities of sharing and mutuality in 'enduring' intentional communities (Jarvis, *ibid*). In the context of local resilience, *how* collectivity is constituted and what we mean by 'community' is important and several authors question forms of belonging and relating that are not rooted in identity and exclusion (Boano; Krasny and Schalk, *ibid*). They reject an 'essence' of community (which 'local' approaches risk mobilizing) and instead invite us to consider radically inclusive practices and to think through feminist perspectives on alliance building across difference. This is crucial when, as Daniel d'Oca points out, there is "no shortage of contemporary weapons of exclusion," (d'Oca, *ibid*) and as Sally Weintrobe suggests we need a 'caring imagination' to overcome processes of 'distancing' others in order to build a sustainable world (Weintrobe, *ibid*).

Co-Production in Practice based research and Pedagogy

In a series of discussions on resilience held in the Sheffield School of Architecture in 2013 and since then, staff have emphasized that for them, resilience is not about accepting conditions as givens (the conditions we 'should be resilient to'), but concerned the importance of the future and having agency in making one's future. This agency is understood to be collective and located. We reflect on what a critical approach to our own institutional position is, particularly in relation to the city. How do we act, with and for whom, with staff questioning where future strategies for change will come from in conditions of austerity? A number of the papers in the 'Architecture and Resilience on the Human Scale' conference, importantly then, engage with issues of co-production in 'practice', both the co-production of research and knowledge, as well as co-production of projects and the city more broadly.

Elinor Ostrom and her colleagues introduced the term co-production whilst studying urban services, and used the term to describe the reciprocity between 'producers' and citizens involved in the delivery of many public services (Ostrom, 1976). As a practice, it has since

been actively developed in the delivery of public health care (Cahn, 2000) and in these cases co-produced services were found to provide better patient care and increase well being. Increasing evidence over last 15 years supports this (The Health Foundation, 2008).

At the University of Sheffield, researchers across disciplines are working with co-production to specifically engage local communities in research⁷ and it is becoming increasingly important for producing knowledge for sustainability and resilience (Polk, 2015) Co-production in the design, making and maintenance of space and buildings is significant in ensuring that those lived spaces actually meet the needs of those who inhabit it. Amongst the other changes we face, is that of aging populations, with authors showing not only how both market and social provision fails to meet older people's housing needs, but how participatory design research can address these concerns and failures head on (Wigglesworth, this volume). This project, like the other practice based works in this volume, demonstrate the significance and importance of being located on the ground, working across many levels, confronting theory, policy, research with conditions in lived reality.

Whilst our approach here is to emphasise and highlight those working in located way, it is also in recognition that resilience is made through connections at multiple scales through that location. The notion of 'agency' foregrounded in research at SSOA (namely Spatial Agency (Awan, Schneider, Till, 2011), 'Agency: Working with Uncertain Architectures' books (Kossak, Petrescu, Schneider, Tyszczyk, and Walker, 2009) has also been explored by a number of papers (de Carli; Paramita and Schneider; Santacruz, this volume) Authors highlight the need for multi-agency responses and partnerships between diverse groups (Fagan-Watson and Burchell, this volume), where the intersection between scales needs to place "equal value on [different] partners expertise" (Roser Gray and Del Signore, this volume) they go on to suggest this can strengthen bottom up resilience, whilst also shaping policy collaborations.

In considering the ways universities can support communities, attention is also paid to rural contexts, questioning the way universities might best support diverse, indigenous rural development (Wan, Ng, Chi and Li, this volume). Recognising the importance of location-specific approaches for resilience, the ethical questions of difference, not only amongst 'communities' but between them, is as important as ever. As authors here suggest, we have an ever-greater need for understanding varied cultural approaches to climate change (and other attendant crises) and the need to understand the varying social impacts in those different contexts (Lawrence and Fellingham, *ibid.*). The need for different cultural understandings on the human scale, of diverse practices, customs, skills, knowledge and memories is reflected here in many ways. Authors particularly reference the vernacular (Derbyshire, *ibid*) and others highlight the long-standing success and capacities of vernacular approaches, for instance, in coping with flooding (Ramasoot and Nimsamer, *ibid*).



The importance of the vernacular is not necessarily only in reference to an architectural ‘type’ or techniques, but rather brings with it the need for those resilient practices, other knowledges and ways of being in the world.

A number of papers bring new tools for locally co-producing knowledge and research on the city, from digital civic surveys (Crowe, Foley and Corcoran, this volume), to geo-timelines to make change visible (Foley and Crowe, *ibid*), to locative-based social media as tool for co-producing and co-designing (Ip, *ibid*). Whilst the tools are all different in scope, they all point to the importance of co-produced local knowledge for planning, with authors pointing particularly to an openness of production, which can be used and developed by others elsewhere (Foley and Crowe, *ibid*). In many ways taking on qualities of the ‘vernacular’ as something shared and developed collectively, i.e. a commons.

A number of papers bring the possibilities for co-production through pedagogy, working in ‘live’ situations. Here university work, both research and teaching, becomes a testing ground for new social and environmental development, testing ways to foster a “common agency” and “strengthening modes of co-production with inhabitants” (Stollmann, this volume). In these initiatives universities acts as brokers between levels (Butterworth and Mackay, *ibid*), with authors concerned with the ethics of longevity (how to build resilient partnerships); or the building of skills for resilience, such as learning how to participate and to respect difference. These and other skills are ones that can only be developed in interaction with others (Bernardt, van Assen and van Spyk, *ibid*). They also enable the development of skills for self-initiated projects, with authors reflecting on how these ‘live’ pedagogical projects actions can initiate new collective activities in the long term (Denicke-Polcher, *ibid*).

The relationship of architecture to resilience is also being explored by practitioners through Architectural Research Practice (ARP). Practitioners are engaging with a wide range of issues and use variety of research methods to explore technical solutions for climate change adaptation of buildings (Baker, Bauman, Winder, this volume), co-production methods for designing of new neighbourhoods (Grau, Schoenert and Carpaneto, *ibid*), developing new forms of renewable energy within building facades (Flynn, *ibid*), and addressing issues of inclusion/ exclusion in urban design and strategies for resilience⁸ (D’Oca, *ibid*).

Not only are the kinds of knowledge and skills we develop key to resilience, so are practices of learning, which also need to become embedded. Authors bring architectural pedagogy as a site for change, whether it is creating more cohesive forms of pedagogy around ecological resilience and building systems (Fannon and Laboy, this volume) or

teaching local energy transition in 'live' contexts (Bernardt, van Assen and van Spyk, *ibid*). Initiatives enable experiential learning environments, bringing resilience into a kind of immediacy, resilience aims to be both topic and process.

Science and Technology for Resilience

In working towards more ecologically and socially just futures, we need science and technologies (new and old) to help us make sense of changes, and help inform judgments around how we build (literally) that future. Whilst ideas of 'future' often invokes certain images of 'smart-ness' and smart technologies, interestingly here a number of authors are rather concerned with the production of knowledge, which potentially uses 'high' or smart technology and computation for research, but the kinds of technology involved in construction are themselves varied, and culturally and socially specific. This is evident for instance in the collaborative construction undertaken in the Ludian County (Yunnan province, China), with researchers working with a family to reconstruct their home respecting traditional cultures and their autonomy, yet supported by science to ensure seismic capacity, thermal comfort and low cost (Chi, Ng, Li and Wan, *this volume*). Questions of autonomy, particularly in relation to energy, are raised in different ways, from work on 'resilient homes' and the self-provisioning of energy regardless of income (Roaf, *ibid*), retrofitting much loved existing dwellings for energy neutrality (Dobbelsteen, Jonathan and Kruizinga, *ibid*), or finding passive solutions for adaptation to climate change (Vogiatzi, Pelsmakers, Altamirano, *ibid*).

Yet the kinds of knowledge we can produce and how we do so is under question here too. The inevitable gap between model and reality, however dynamic ones model, must be under consideration. One path, the development of more accurate models, is the one most present here. Developments include building frameworks to simulate site-specific climate change adaptation, particularly at a neighbourhood scale (Peng, *this volume*), where computational modelling can help analyse performances in context. Others include developing simulations to explore urban microclimatic changes and the connected increases in energy consumption (Yoon Yi and Peng, *ibid*); the coupled relation between future climate change and predicted energy consumption is also under analysis here (Honglian, Liu, Shusheng, Xujie, Liming, *ibid*). Other authors bring examples of integrating socio-technical aspects to simulations, analysing how difference in the behaviours and practices of building inhabitants can be applied to simulate and test differences in performance (Xexakis, Dobbelsteen, *ibid*).

Some authors here, work not with prediction, but with the evaluation of the built, lived reality and emphasise the importance of learning from those now occupying new (or retrofitted) buildings. This is particularly important in assessing how well developments meet



their claims, to be for instance in being low carbon (Gupta, Kapsali and Gregg, *ibid*). There are new possibilities proposed for methods of making post occupancy evaluations (Barbosa Villa, Vigidal de Lima, Gerrefa, Lemos, *ibid*), as well as the evaluation of new collective housing types, here co-housing, in terms of their resilience and ‘redundancy’ qualities (Stevenson and Narozny, *ibid*). In these cases the knowledge of how a project meets the varying needs and preferences of inhabitants, the actual energy savings made and cost implications are important to feedback if architecture is to improve. Analysis of the built environment here, is importantly not confined to dwellings, but extends to examine urban networks, analysing social-spatial effects of connectivity and movement in building resilience (Goodship, *ibid*) or the effects of rivers and ‘blue corridors’ (Pattacini, *ibid*). Other authors explore using responsive technologies and ‘cognitive tectonics’ (Méndez-Vázquez, *ibid*), or technologies for ‘post-event’ recovery, but again working with close evaluation of the specificity of regional climates and context (Ladipo and Reichard, *ibid*). Collectively, this diversity of approaches is important in meeting the complex and specific needs of different people and places.

Conclusion

We hope this conference contributes to new insights to the theory of resilience, especially by focussing on the ‘human scale’ perspective. The practical solutions and concrete suggestions presented in the conference papers might hopefully contribute to new approaches to resilience in architecture and connected fields, and have an immediate impact on communities and practices who are on the front line of dealing with the effects of global change. The new **critical, political and ethical approaches and the socio-technological strategies** that this conference put forward as well as the notions of Agency and Co-production as instruments for generative, active and evaluative projects should be contributing to the debate on resilience and providing innovative new forms of inquiry leading to more appropriate solutions to the current global crisis we face.

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Notes

¹ For these reasons, this paper does not mention all papers in the conference and all topics discussed, but focuses on those which are closer to what we have defined as the school theoretical position. However this is not at all an indication of quality of for the papers.

² See for example, recent media articles: Jacob Steinberg “Arsenal’s away form in Crystal Palace win shows new resilience” in *The Guardian*, Sunday 22nd February 2015 <http://www.theguardian.com/football/2015/feb/22/crystal-palace-arsenal-arsene-wenger-away-form> (Accessed 29.07.2015); Jayne Carrington, ‘Building resilience into business will benefit people and the bottom line’, in *The Guardian*, 10th October 2013 <http://www.theguardian.com/sustainable-business/mental-health-resilience-employees-profits> (Accessed 29.07.2015), and Larry Elliot and Patrick Wintour, ‘George Osborne and Mark Carney issue pre-budget economy alerts’ in *The Guardian*, 18th March 2014 <http://www.theguardian.com/uk-news/2014/mar/18/george-osborne-mark-carney-pre-budget-alerts> (Accessed 29.07.2015).

³ See for example, the ARCC-network (UK) or the FP7 Critical Infrastructures Preparedness and Resilience Research Network.

⁴ Here we refer to the rapid construction of mass areas of cities, such as those documented the recent MOMA exhibition, *Uneven Growth: Tactical Urbanisms for Expanding Megacities*. The exhibition looked at the ‘mega cities’ of Rio de Janeiro, Mumbai, Shanghai, Istanbul, Hong Kong, Lagos and New York, and in a number of cases on mega-developments, in those cities. We also refer to the large-scale (re)developments and reconstruction of ‘old’ cities such as those hinged on Mega-Events, such as the Olympics (Barcelona, Sydney, Beijing, London, Rio), and FIFA World Cups etc., which far from seeming as a ‘one-off’ set precedents for the dominant mode of delivery of urban development (Raco, 2014).

⁵ See for example the recent work for the MOMA exhibition: *Uneven Growth: Tactical Urbanisms for Expanding Megacities*.

⁶ We put the terms, ‘social capital’ and ‘resources’ in inverted commas as whilst they are the terms used by the authors (Lewis and Conaty), we also recognize that they derive from (and potentially perform) a particular economic way of viewing of both people and relations.

⁷ Please see for example Kate Pahl’s projects such as: “Ways of Knowing. Exploring the different registers, values and subjectivities of collaborative research” <https://waysofknowingresearch.wordpress.com> (Accessed 27.08.2015), “Imagine. The social, historical, cultural and democratic context of civic engagement: imagining different communities and making them happen.” <http://www.imaginecommunity.org.uk> (Accessed 27.08.2015) and The University of Sheffield’s, Research Exchange for the Social Sciences work in this area: <https://www.sheffield.ac.uk/ress/coproduction>.

⁸ See also: Richards, William (2014) ‘Catalyzing Force A resilient approach to the coast’. In *The Journal of the American Institute of Architects*. http://www.architectmagazine.com/aia-architect/aiavoices/catalyzing-force_o 21st August 2014 (Accessed 28.08.2015).