Resilience, Political Ecology and Degrowth _

A Critical Review of Three Main Approaches to Political Geography and Urban Planning Theory

Maura Benegiamo[1]

1 Department of Sociology and Social Research (DSRS),Università Milano-Bicocca, Italy, mbenegiamo@gmail.com

ABSTRACT **Resilience, political ecology, and degrowth constitute three main approaches to address resource-society relationships in the context of the integrated energy-food-climate nexus and of its crisis. These diverge substantially, despite some common points, such as the idea of a non-equilibrium-ecology and of a more complex engagement of human-environment relations. Resilience has raised criticism for not taking into account how environmental injustice, power relations and the capitalist mode of production shape contemporary ecological issues, key concerns for political ecology scholars. After providing an overview of the main criticism addressed to the resilience paradigm, the chapter aims to introduce the political ecology approach, in order to move toward a more inclusive paradigm that is able to address the environmental question in relation to social justice concerns. The third section introduces the emergent debate on degrowth as an alternative paradigm to address socio-environmental sustainability and reframe global challenges such as austerity and deindustrialisation in urban areas. The chapter concludes in summarising the main aspects emerging from the critical review of these three notions, presented in the context of political geography and urban planning theory. It further argues for a greater integration of the 'agency of nature' and of the role of biological processes in the understanding of the way society functions.**

KEYWORDS political ecology, degrowth, environmental justice, neoliberal governance, post-human thinking

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1 Introduction

It was in 1962 that the North-American scientist Rachel Carson published her book *Silent Spring* (2002). In the essay, which went down in history as one of the first manifestos of the environmental movement, Carson reassembled the results of years of research on the disruptive impacts of synthetic pesticides on the environment, especially DDT, and evidenced the interfering effects on the food chain and human health. Beyond the irreversible loss of biodiversity and the incapacity of nature to indefinitely absorb polluting substances, *Silent Spring* seriously questioned the neutrality and the safety of technological progress – especially when it is growth-driven. Carson's claims had a strong influence on and inspired thousands of activists in the USA. Since then, the environmental question has gained attention within the global political debate, and rapidly merged with energy-transition concerns. In 1972, the Stockholm Conference on the Human Environment and the Rio Earth Summit of 1992 enshrined the entry of the environmental question into the global agenda (Normann & Carr, 2009). However, despite more than forty years of policies and initiatives, humanity still faces critical ecological issues. Environmental migration is growing and, despite technological advances in agriculture, about 795 million people suffered from undernourishment last year (FAO, IFAD & WFP, 2015). Events like climate change or soil degradation have deep social implications and roots. These, in turn, attest to the strong connections between politics, economy, and the environment. Finance speculation, chain-monopoly, and unequal patterns of resource access can transform a drought into a famine (Davis, 2001; Watts, 1983) and an energy transition policy into a food crisis (Chakrabortty, 2008; Rosset, 2009). It is, therefore, important to adopt a theoretical and analytical approach that takes into account multiple aspects of the environmental question, thus avoiding simplistic explanations.

The chapter focuses on three main approaches dealing with ecological concerns and their integration into planning. In the first section the idea of resilience is discussed. This is a dominant paradigm that, in the last thirty years, has increasingly gained importance, becoming a central framework that systematises the relations between humans, the environment, and the future, particularly in a development-related context. However, despite its success, the analytical framework of resilience remains limited. In particular, the resilience framework gives little attention either to the role of power relations in influencing environmental issues, or to the strong inequalities that underpin environmental vulnerabilities. Imbalanced self-responsibility, normative commitments, and maintenance of the status quo are among the main critiques faced by resilience. In order to address these limits, section two presents the political ecology (PE) approach and its reception in the urban context by urban political ecology (UPE). The principal ground of PE consists inrecognising that both the idea of nature and resources are social constructions and heavily contested concepts. By this means, PE enables the re-politicisation of environmental issues and takes into account broader scalar processes. The third section aims to introduce the degrowth idea as an alternative guiding concept and target as well

as a more viable and equitable response to the global economic and ecological crises. The chapter concludes in summarising the main aspects that emerge from the critical review of these three notions, presented here in the context of political geography and urban planning theory. It also argues that both PE and degrowth research would benefit greatly from a better understanding of the functioning of the ecological processes they address and their role in shaping social practices.

2 Resilience: Governing Unpredictability

The concept of resilience entered into the planning discipline mainly through the field of disaster risk management and rapidly expanded to other domains (Pizzo, 2015). Often suspected to be just a sort of 'buzzword' (Anderson, 2015), its versatility has raised criticisms claiming a general lack of precision and difficulties for translating it into effective planning practices (Davidson, 2010). Nevertheless, it is possible to retrace a common matrix behind the multiple uses of the word 'resilience'. This leads to a specific organisational and interpretative logic, which concerns the relationships between humans, environment, and technology. This peculiar framework becomes even clearer when resilience is shifted "from an ecological theory into a socio-ecological governance framework" (Evans, 2011, p. 224). Therefore, it is worth analysing the ensemble of premises that the paradigm of resilience brings together – and how it does it – in order to enhance the understanding of its possible implications.

The contemporary diffusion of the concept comes from the works of Crawford Stanley Holling, a Canadian ecologist who, in the '70s, introduced the idea of resilience to biology, taking it from the field of engineering-physics. This contributed to the reframing of the classical vision of the behaviour of ecosystems (Holling, 1973; 1996). Making a distinction between engineering (ENR) and ecological resilience (ECR), Holling defined ECR as the "amount of disturbance that a system can absorb before it changes state", whilst the ENR is described as the "time of return to a global equilibrium following a disturbance" (Gunderson, Holling, Peterson, & Pritchard, 2002, p. 230). While ENR refers to the measurement of the speed that a system takes to bounce back to its previous state of equilibrium, ECR measures the extent of the changes that a system can sustain before definitively transforming itself (Davoudi, 2012). In other words, with Holling's definition, resilience became the measure of a system's ability to persist, despite having undergone variations (Adger, 2000). It describes the capacity of a system to reorganise itself in the face of unpredictable, extraordinary, or drastic events yet without compromising itself and its functionality (Davoudi, 2016). This interpretation conveys two important implications. Firstly, it moves away from the idea of a single state of equilibrium, which was the predominant vision among ecological economists (Nelson, 2015). By demonstrating the existence of ever-changing and non-equilibrium systems, ECR shows how ecosystems tend to reach their stability through the continuous establishment of multiple and alternative

equilibria. A direct implication of this interpretation is that of shifting the focus on relationships between the system and its components rather than on their systemic function (Davoudi, 2016).

The awareness of the existence of non-linear dynamics in ecosystem functioning (Bjørnstad, 2015) has been crucial in reframing ecological strategies to better address socio-ecological issues, such as those of desertification and soil degradation. It also enhances understanding of territories as co-products of human activities and ecosystem functioning. Indeed, in some contexts, the anthropic component, instead of representing a factor of disturbance for ecosystem dynamics, can be essential to maintaining its equilibrium. This is, for instance, the case with rangelands and pastoral territories (Westoby, Walker & Noy-Meir, 1989). Human action – and labour - are also components in the generation of ecosystem services (Depietri, Kallis, Baró, & Cattaneo, 2016). Nevertheless, it is important to consider the implications of introducing a biological principle into a socio-environmental system like a city.

For planning, resilience defines an approach integrating short-term actions (risk management) and medium-term actions (development policies). However, as Barbara Pizzo (2015) points out, less is said about the kind of resilience that should be pursued, how and to what ends. These are strictly political questions that involve different 'cities imaginaries', i.e. ideas and representations about how cities should look, function, or be experienced (Bridge & Watson, 2002). Take the example of water management: one can provide cities with rainwater retention tanks in order to reduce flooding and stock water for periods of drought, or it can be decided to address urban inequalities in water access and consumption, or to reduce overbuilding. Resilience goals are usually outlined as improving sustainability, reducing risk, and recovering from shocks. However, these answers are still very vague as they end up omitting the issue of the crisis itself. The notion of crisis tends to be aligned with its initial ecological definition indicating the interruption of an equilibrium and consequently being reduced to a general label covering a large range of events from earthquakes to terrorist attacks or economic crises (Ahern, 2011; Doyle, 2016; Folke et al., 2010; Swanstrom, 2008; Walker & Cooper, 2011). Similarly, resilience literature often focuses on urban reconstruction but tends to give less importance to the nature of the disaster (Vale & Campanella, 2005). However, as Barbara Pizzo (2015) points out, not all the shocks are the same, nor are they equally unwelcome: a strike or a street-protest differs in many aspects from an electricity shortage. An uncritical approach to the crisis also leads to the avoidance of questions concerning geographical scale, as well as the structural causes of the situation at hand (Armitage & Johnson, 2006). This is evident when resilience is employed in marginal and peripheral areas, where the idea of vulnerability replaces more political concepts like poverty or class. A further implication is that of perceiving a crisis as normal and unavoidable, limiting the question to a matter of coexistence (Cifadoloz et al., 2011; Evans & Reid, 2013; Folke et al., 2010; Olsson, Folke & Hahn, 2004). This is, for example,

the case with climate change, where the frontiers between mitigation and adaptation are increasingly blurred (Evans, 2011).

The legitimacy of proactive planning is directly brought under scrutiny by the definition of ECR itself. Despite a shared tendency among scholars to prefer the ECR definition over ENR, also referred to as evolutionary resilience in order to stress a deeper commitment to change (Davoudi, 2012; Doyle, 2016), ECR remains highly conservative. This is not only because of a strong focus on system equilibrium but also because of an essential shift in the understanding of stability. As declared by Gunderson et al. (2002, p. 230) the distinction between ECR and ENR relies on "a focus on maintaining efficiency of function (engineering resilience) versus a focus on maintaining existence of function (ecological resilience)". Moreover, projecting future equilibria is not only considered unrealistic, given the unpredictability of threats, but also unsuitable as it risks undermining the potential for new stages to emerge (Evans & Reid, 2013). In some contexts, spontaneous reactions prove to be more efficient than strong regulation or advanced planning frameworks (Harrald, 2006; Webb & Chevreau, 2006). Resilience, therefore, is achieved through the reinforcement of technological and infrastructural connections in order to share information and increase the range of individual reactions to shock. The emphasis is put on self-reliance and self-responsibility (Olsson et al., 2004). In this sense, resilience is invoked for policies aiming to strengthen people's capabilities to face socio-environmental challenges. Nevertheless, the different degrees of vulnerability have historical, social, and cultural roots and are influenced by political choices, thus they require far-reaching structural reform in order to be addressed. Scholars underline that limiting actions to the improvement of self-organising, adaptation, and managerial skills of local populations often results in the tendency toward the individualisation of responsibility, which is often matched with imbalanced self-responsibility (Coaffee, 2013; Davoudi, 2016).

Resilience is also usually linked to participation (Innes & Booher, 2010; Pearce, 2003), as a way of facilitating the reframing between civil-society and institutions and to enrich the exchanges of knowledge between experts and locals (Folke, Hahn, Olsson, & Norberg, 2005; Olsson et al., 2004). However, participation is not always horizontal, nor does it necessarily mean effective empowerment (Holden, 2011; Kesby, 2007). Power asymmetries, such as those connected with class, gender, or race are crucial in determining the conditions of access to participatory arenas and the possibilities to influence them. Power is also embedded in knowledge and discursive formations (Foucault, 1980) as is the case for the resilience discourse.

This shift towards guiding and influencing people's behaviour to develop their resilience attitudes displays the deeply normative side of the resilience paradigm when it becomes part of governmental logics (Pizzo, 2015). Normative commitment and power/knowledge formations are the basis of Foucault's (2004) definition of neoliberal governmentality, a form of government that acts through the indirect conditioning of people's behaviour. Scholars claim that there is a substantial homogeny

between the neoliberal governance rationality and the resilience thinking, especially in its Anglo-Saxon version (Joseph, 2013). Walker and Cooper (2011) highlight how resilience and neoliberalism share a similar worldview. According to Nelson (2014, 2014a), the resilience paradigm played a pivotal role in influencing the post-Fordist-neoliberal logic of governance. Emphasis on system-instability and systemic risks have facilitated reframing concerns about the inner unsustainability of contemporary production and consumption patterns as economic issues and a matter of efficiency. This results in a deepening of the commodification process, documented by the rise of the green economy, the marketisation of ecosystem services and the recent trends in biotechnology research. This in turn highlights the increased stress on the natural world and biological processes in order to reach preservation and mitigation objectives (Pellizzoni, 2011).

3 Political Ecology, Urban Political Ecology and the Global Urbanisation

Power relations and capitalist accumulation dynamics are central concerns for political ecology (PE): a multidisciplinary research field that integrates different methodologies and analytical tools to explore the social bases of environmental issues (Robbins, 2011). The analyses in political ecology underline the multiple processes of value and meaning attribution related to nature (Agarwal, 2001; Bell, 2016; Bridge & Wood, 2010; Martinez-Alier, 2003). Scholars focus on power-relations and systems of public/private governance associated with space and environment (Adams & Mulligan, 2003; Agrawal, 2005; Beymer-Farris & Bassett, 2012; Davis, 2001; Sundberg, 2008). PE is equally interested in commodification processes and related patterns of appropriation, distribution, and production (Fairhead, Leach & Scoones, 2012; Heyen & Robbins, 2006; Ojeda, 2012). In this sense, rather than defining a specific discipline's boundaries, PE adopts a critical approach that combines the main concerns of political economy – i.e. how broader socio-political aspects shape economic relations such as those in production and distribution- to the field of ecology (Blaikie & Brookfield, 1987). Though political economy constitutes the original substrate of PE, anthropology, environmental science, and human geography contribute to providing PE with specific analytical tools. These highlight different aspects of the relationship between nature and society. Finally, PE is also influenced by postcolonial and subaltern studies and increasingly articulated by gender studies, feminism, peasant studies, and social movement analyses. Questions of class, race, and ethnicity have a central role in understanding uneven and unequal patterns of access to, and control over resources as well as impact distribution. Accordingly, PE research topics are mostly focused on conflict analyses, processes of marginalisation and environmental justice issues (Schlosberg, 2007). The term subaltern studies derives from the works of the Subaltern Studies Group (SSG), a collective of South Asian historians who analysed post-colonial history from a subaltern point of view (Guha & Spivak, 1988). The term subaltern refers to the ensemble of more marginalised

people such as peasants, women, or informal settlers and workers. These people tend to be considered as disempowered subjects and their role in shaping historical and political dynamics is often minimised. Contrasting this vision, scholars within the SSG analyse the political role played by the subaltern subjects in shaping the postcolonial state (Spivak, 1988; Chatterjee, 2004).

Despite this strong interdisciplinarity, the PE approach has its own specific analytical tools such as the idea of 'production of nature', the notion of metabolism and 'metabolic rift' (Clark & Foster; 2009; Foster, 1999). The central thesis of PE is that nature is a social construction and a heavily contested concept. According to PE scholars, nature is not something separate from human society; on the contrary, "nature is mediated through society" (and vice versa) (Smith, 2008, p.33). Human relations with nature are an historical product (Smith, 2008). The economic system and in particular the capitalist mode of production is currently one of the main patterns of nature production. This interpretation echoes the EcoMarxist analyses and Lefebvre's insights into the production of space (Lefebvre, 1991) and is further integrated by the idea of 'second nature'. The latter refers to the re-modelling of the natural world through human action (Harvey, 2011). The EcoMarxist view builds on the idea that, within a capitalist society, nature is subsumed as a means of production that, unlike human labour, cannot be daily and indefinitely replicated (O'Connor, 1988). In this sense, nature is portrayed as a fictitious commodity (Polany, 1944) on which capitalism depends for its continuity, but which it is unable to generate, as nature creation is external to capitalistic production. This leads to what James O'Connor (1988) defined as the second contradiction of capitalism, which is also the fundamental cause of the ecological crisis, unless capitalism is to re-form nature in order to maintain the value accumulation process. O'Connor wrote his theory in the '80s; nowadays, the generation of natural elements is at stake in biotechnology research. Building on this insight, Neil Smith's idea about the production of nature tries to account for nature's entanglements in market logic. In the words of Noel Castree (2000, p. 26): "[...] nature itself becomes internal to the economic system. Simplifying, this internalisation takes two forms, namely intentional production (as, for example, with GMOs) and unintentional production (as, for example, in the new ecologies created unintentionally by aquatic, terrestrial and atmospheric pollution)".

PE approach also led to a better inquiry into existing relations between social injustices, marginalisation and the ways that nature (and space) are constructed. Further debate on the neo-liberalisation of nature has shown how nature has become a new arena for economic accumulation, from the privatisation of urban water services to the financialisation of ecosystem-services (Heynen, McCarthy, Prudham & Robbins, 2007). Moreover, the deepening of the process of nature's commodification tends to result in an increase in environmental conflicts (Swyngedouw, 2005; Temper, del Bene, & Martinez-Alier, 2015). Besides commodification, PE is also interested in illustrating the political, cultural, and technological infrastructure that determines what a given

society defines as a resource, and how it does so (Martinez-Alier, 2009). While scientific knowledge and technology can enable the exploitation of a determinate natural element, thus allowing its definition as a 'resource', it should be noted that the defining of a resource is also affected by various cultural, moral, and/or religious factors. Similarly, certain characteristics of resources are considered intrinsic. However, they are more likely to be socio- political constructions (Bridge, 2009). This is the case for the notion of scarcity related to oil, which is more related to socio-political constraints than geological ones (Bridge & Wood, 2010). It follows that deterministic approaches to resources as intrinsically abundant or scarce should be carefully examined. However, physical qualities of resources should also be taken into account. Timothy Mitchel (2011) demonstrates how the physical and geophysical proprieties of carbon and, subsequently, oil have contributed to the building of modern and contemporary democracies. In his book, *Carbon Democracy*, he shows how these two resources have had a significant and distinct impact on the organisation of protests and political dissents in a number of countries worldwide. Finally, it is important to bear in mind that considerations over a resource's value and utility are multiple, and not always compatible. Conflicts are also the result of clashes between different imaginaries and interests. Furthermore, what is considered a resource for some may engender dispossession or pauperisation for others. Green technologies are good examples: the environmental impacts of producing the wind turbines or solar panels is mostly sustained by peasants living near rare-earth mining (Parry & Douglas, 2011). Indeed, the rising importance of green technologies has led to the expansion of extraction projects to provide minerals essential to their functioning (Massari & Ruberti, 2013). However, the relationship between mining, violence, and the degradation of health and environment is well documented in literature (Ali, 2014; Holterman, 2014; Bebbington & Bebbington, 2012; Deneault & Sacher, 2012). Moreover, the capacity to supply the expanding green technology industry with rare-earth minerals is being questioned (Moss, Tzimas, Kara, Willis, & Kooroshy, 2011; Wübbeke, 2013). On a similar note, fiscal incentives on agro-fuels have fostered a shift in agricultural production from food to fuel and encouraged policies that enabled land-grabbing in the global south (Benegiamo, 2016; GRAIN, 2013). These examples challenge the sustainability of an energy transition that does not include a serious reduction in consumption. Exactly what needs to be reduced, and how this will be administrated, are still political questions that need answering.

Introducing a multidimensional and scalar approach that takes into account transnational flows and processes is essential to addressing local sustainability, especially in urban contexts (Neumann, 2009; Roberts & Parks, 2009). The idea of socio-ecological metabolism, developed in the field of ecological economics (Fischer-Kowalski, 1998, 1998a), is helpful in decrypting these processes. Ecological economics studies the economy as a metabolic process that mainly involves energy and material flows as input and pollution, and waste as output. In the urban context, the notion of urban metabolism has enhanced the understanding of how cities function, challenging

the perception of cities as mere social artefacts (Heynen, Kaika, & Swyngedouw, 2006; Swyngedouw, 2006; Zhang, 2013). This approach is integrated with quantitative input-output-type frameworks such as Material and Energy Flow Accounts (MEFA), Human Appropriation of Net Primary Productivity (HANPP), Energy Return on Investment (EROI), and the water footprint (Dinarès, 2014). The metabolic frame also gives birth to a conception of cities as open-systems, allowing us to see the urban dimension as a global socio-ecological process that extends beyond the physical limits of the city (Keil, 2003). Indeed, because of this interconnection between the urban space and peripheral zones, urbanisation has become the principal feature of a globalised space and it can be better defined as a global process of transformation of space, distinct but related to the city (Lefebvre, 2003). Cities arose as one of several privileged observatories to study this process (Angelo & Wachsmuth, 2015).

By bringing the main insights of PE into urban domains, urban political ecology (UPE) seeks to understand how unequal power relations, and differentiation such as race or class, may inform the production of specific urban environments, which in turn contribute to the re-production of these inequalities (Heynen, 2017; Razack, 2002). Kaika and Swyngedouw (2011, p. 103) define cities as "contested socio-natural processes", consisting of the deterritorialization and reterritorialization of both material and social circulatory flows (from energy and water to migrants). These flows cross economic corridors that are in turn both physical and social as supported by natural, technological, political, and institutional infrastructures. The terms deterritorialization and reterritorialization are two neologisms coined by Gilles Deleuze and Félix Guattari (1972) to indicate two subsequent moments in a control driven process of territorial transformation. In geography and urban political ecology, they are mostly employed to describe globalisation as a process of capitalist accumulation involving spatial restructuring through the delocalisation and displacement of capital (Brenner, 2004). Kaika and Swyngedouw (2011, p. 97) indicate four main orientations in urban socio-ecological research (p. 97): i) research on neo-liberalisation of urban environments; ii) socio-ecological urban movements and environmental justice; iii) urban socio-ecological imaginaries - such as those related to the degrowth approach described in the remaining part of this section; iv) research on urban metabolism.

Recently, the reception of Latour's work (2005) and Actor-Network Theory (ANT) in PE and UPE has led researchers to pay closer attention to the 'agency of nature' and ecosystem functioning. The ANT approach has brought "a sensitivity to the material interventions of matter and the animal world in how agency and politics are constituted" (Müller, 2015, p. 34). ANT's main claim consists in contesting that man has an ontological priority over other material and living entities. Thus, ANT is interested in exploring relations between humans and non-human entities and their role in co-producing specific knowledge frameworks and socio-material realities. Related notions of hybridity or assemblages of hybrid elements have been especially developed within UPE (Braun, 2005). That of hybridity is a concept that allows us to understand the

agency of the natural world in an urban context. For example, in his work on the relationship between urban water systems and the development of the industrial city, Gandy (2004) highlights how cultural and scientific knowledge about hygiene and bacteria behaviour play a greater role in shaping urban architectures, for example through the action of micro-organisms involved in water purification processes. Thus, nature is not just perceived as a passive entity but rather as a series of chemical, biological, and physical processes that influence the way we build cities and the way we inhabit them. According to Zimmer (2010, p. 347), an important role of urban political ecology is to then direct attention toward the identification of "winners and losers of specific forms of hybridization".

4 The Degrowth Proposal

After having introduced resilience and political ecology, it would be beneficial to present the notion of degrowth, an emergent framework that was developed in the fields of ecological-economics, economical anthropology, and within the environmental movement (Martinez-Alier, Pascual, Vivien & Zaccai, 2010). Degrowth is an expansion of PE concepts and combines them with critical research on development and developmental ideology (D'Alisa, Demaria & Kallis, 2014). It calls for policies and practices enabling the reduction and the equalisation of social metabolism. These are, in turn, rooted in an alternative vision of society and economy (Kallis, 2011). The degrowth approach builds on the idea that economic growth is by no means compatible with socio-environmental sustainability goals since inequalities and environmental injustice represent both the premises and the results of a growth-led economy. However, such a statement does not imply that degrowth is an attempt to return to the past or a romantic reunification with nature, but rather a change in the scale of values enabling the emergence of solutions other than growth. Scholars of economic anthropology and economic philosophy demonstrate that market ideology, as well as the growth imperative, are historical socio-political constructs rather than the product of innate human tendencies, which are subject to change (Mauss, 1970; Scott, 1976). Thus, scholars of degrowth are concerned with alternative developmental practices and patterns (Gezon & Paulson, 2017). A similar notion is that of selective growth, which concerns the reframing processes about what should be 'grown' and what is better to 'de-grown'. Degrowth also relies on the main insights from the literature on the connections between ecological and economic crises as well as the constant presence of crises in contemporary society (Evans & Reid, 2013). With respect to these issues, the degrowth approach aims to construct a proactive and alternative response to the economic crisis. Hence, an interesting debate within degrowth literature is the one related to rethinking austerity and austerity policies (Garcia & Martinez-Iglesias, 2017). Scholars argue for a re-evaluation of the current approach to austerity, which involves reductions in welfare and increased unemployment, by moving toward a more functional organisation of the national/regional budget and

taxation, for example by rethinking consumption and food production practices (Agyeman & McEntee, 2014) and/or by reducing working time and providing citizens with basic income. Calling for a "positive reconstruction of austerity" Agyeman & McEntee (2014, p. xv), suggest that the degrowth hypothesis could be both a viable solution to increase welfare and improve the quality of the environment as well as a more suitable response to the crisis. Experiments in this direction have been started, for example the case of Detroit. Here, according to the analysis provided by Seth Schindler (2016), civil society's response to the Detroit bankruptcy has been more oriented toward the improvement of policies that challenge the growth-orientation imperative and the emergency narratives characterising urbanism and city governance proposed in periods of austerity (Schindler, 2016; Peck, 2012).

Another interesting field for the degrowth approach is the Shrinking Cities debate on the decline of cities following deindustrialisation (Béal, Collet, De Filippis, Ocejo & Rousseau, 2017). Co-housing, eco-villages, city-farms, squatter settlements, and sharing practices are often listed as examples of degrowth (Cattaneo & Gavaldà, 2010; Domènech, March & Saurí, 2013; Lietaert, 2010). However, doubts have arisen regarding their effectiveness in reaching degrowth goals, such as that of reducing urban metabolism (Xue, 2014). Other examples of a degrowth-driven reform process mostly focus on redistribution, improving public services, and/or moving toward a re-localisation of the economy and reducing exposure to competition (Kallis, Kerschner & Martinez-Alier, 2012). The degrowth paradigm has been criticised because it lacks precise indications about how it would be measured and effectively turned into success. The latter point also raises the important issue of authority, giving way to questions about what kind of power, legitimacy, and institutions a degrowth oriented reform will leverage. In response to these and other criticisms, Giorgos Kallis stresses the pro-active role that the degrowth framework plays, as it "gives purpose and connects policies and citizen initiatives" (Kallis, 2011, p. 874), thus acting as an effective counter-hegemonic vision allowing for social change.

5 Conclusions

This chapter has presented an overview of related literature on resilience, political ecology, and degrowth: three key notions for assessing socio-environmental issues. These have been explored in the context of political geography and urban planning theory. By exposing the main limits and the implicit neoliberal drift in the resilience approach, this chapter argues for resilience's integration with analytical tools developed by PE and UPE. It further argues that the PE approach and its adoption into urban disciplines may enable a better understanding of socio-technical constructs that underpin environmental issues, including that of resilience itself. By highlighting the deeply conflictual character of environmental issues and the presence of inequality at every level, PE and UPE allow the re-politicisation of socio-environmental processes, such as cities. A further step in this direction is represented by the

degrowth debate. The degrowth approach focuses on alternatives to growth and explores related emerging practices and governmental and developmental patterns. It then constitutes a proactive field of analysis that advocates the rethinking of critical global challenges such as the ecological crisis, austerity, and shrinking cities. However, despite a deeper commitment to environmental issues, both PE and degrowth share a tendency to focus preferentially on the effect of society rather than of nature. This potentially risks neglecting the role of biological processes in the reshaping of how society functions. As stated above, the effects of these dynamics are increasingly recognised, especially in UPE where conceptual instruments from Actor-Network Theory, such as those of hybridisation and assemblages, have been introduced. Additionally, within the degrowth debate movements for orienting the research toward a non-anthropocentric approach have been made (Escobar, 2015). In this sense, resilience thinking, with its idea of non-equilibrium systems, contributes to fostering an awareness of ecosystems as the co-product of human and natural action, thus reintroducing biological processes back into urban analysis. However, it is more committed to orienting the governance of these processes toward growth objectives. For their part, both PE and degrowth research would benefit greatly from a more complete integration into their analytical framework of the functioning of the ecological processes they address. Otherwise conveying the idea of nature as an inert and passive entity is likely to reproduce a dualistic vision where human domination over nature is the unilateral agent of transformation within society. Development, planning practices, and social dynamics are not only rooted in, but also constructed by biological processes. Think for instance of the increasing integration into planning theory of the knowledge of the functioning of the ecosystem services or of microorganisms' actions (de Groot et al, 2010; Pedersen Zari, 2015). This shows, among other things, that besides human actions, animal actions, such as those of invertebrates (Lavelle et al., 2006) and insects, are also essential for ecosystem development. Awareness of this can lead to the reframing of the notion of human superiority and thus lead to a changing in the scale of values underpinning the perception of the human/nature relationship. In terms of the importance of scientific knowledge and biological processes, an example is provided by neuroscience and neurophysiological research in the development of analytical neural modelling on deep learning (Kohonen, 1988). These are used by new technologies such as automated driving systems, car transportation, and food delivery software applications. These, in turn, are changing the experience of mobility and consumption in urban areas. However, both these planning approaches and new technologies are conditioned and influenced by power relations that need to be studied because they are crucial in determining who will benefit and who will be excluded by future development patterns.

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