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CHALLENGING
COMPLEXITY BY
SYSTEMIC DESIGN
TOWARDS
SUSTAINABILITY

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BOOK OF ABSTRACTS





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Post-industrial areas on the lens of systemic design towards flourishing urban resilience

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KEYWORDS

Systemic Design
Circular Economy
urban transitions
Sustainable development
post-industrial Resilience

Contemporary worldwide economy has evolved into a global multidimensional process that manifests itself in cities through radical changes in human population densities and urban fabric. Such transformations are so rapid that cities are lag behind to cope with the demands of the market and population. Although this drastic shift has left many formerly manufacture/extractive cities with deprived and outdated urban fabric, this has resulted in the rise of post-industrial cities (ICLEI, 2018). Such accelerated changes have to lead the acknowledgment of these urban environments as challenging precincts to address sustainable development issues (Bulkeley et al., 2011). Parallel to this, focusing on the post-industrial legacy as 'hubs' for radical innovation towards more resilient cities (Ernstson et al., 2010a; Bulkeley and Broto, 2012).

On that view, the Sustainable Development Goal (SDG) trace an relevant roadmap for the post-industrial urban environment. Taking a deeper overview of the SDG 11 "Make cities and human settlements inclusive, safe, resilient and sustainable" and SDG 12 "Ensuring sustainable consumption and growth patterns", cities will have to assemble for a long-term transition to a Circular Economy (CE) in order prevail over the systemic effects of deindustrialization. Taking into account that , "Cities are not actors; they are places where people and economic activities are concentrated; complex social, economic and physical systems" (Otto-Zimmermann, 2011), from a design point of view, it is very likely to undertake such areas with anticipatory approaches, such as design thinking, participatory and systemic perspectives (Buchanan, 1992). To prove how the combination of technology, design and social organization are generating new mechanisms to regenerate these deprived areas. These processes facing the local and global challenges on such precincts must enable a shift in the way they have been undertaken, it is important to introduce a profound holistic vision which can make more comprehensible the complexity of urban context (Grimm et al. 2000; Mehmood 2010; Newman 1999). "The more complex the network is, the more complex its pattern of interconnections, the more resilient it will be of our context" (Capra, 1996). On this critical urban fabric, how can these scenarios reach an inclusive, sustainable and cohesive urban transitions, that can decrease future economic, environmental and social costs, but at the same time strengthening economic competitiveness? How can territorial thinking in post-industrial areas foster frameworks to address the current environmental and economic challenges of society?

Such post-industrial areas regarded as living metabolism or "systems of systems" are on the need to search for resilience in order to tackle climate change and its economic impact. To empower urban transitions in those scenarios it requires design approaches on innovative strategies, services, and governance that support access to the regenerated areas while promoting social cohesion and flourishing local economies (Nevens, F, et al., 2013). Consequently, there is continuous support at the frontline of the cities agendas for a paradigm shift from the conventional linear to CE. As the aim of the CE is to regenerate the economy meaning to "keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles" (EMF, 2013). Given the current environmental and economic challenges of society, it is required innovative approaches to complexity on the urban environment, where the systemic one can be an efficient way to interpret and give solutions. On that view, cities will play an important role in a global transition to a CE (EMF, 2017).

Therefore, to pave the way to an efficient urban transition it's needed new anticipatory approaches on sustainable development from a holistic and sy-

stemic point of view that create cohesive and smooth transition (Barbero, 2017). To enable this processes, the Systemic Design Approach (SDA) offers determined instruments for territorial thinking that allows to visualize and design the flow of material and energy from one element of the system to another, transforming outputs of one process into input for another one in order to obtain zero emissions and generating resilient territories (Bistagnino, 2011). This methodology generates new relations among the entities of a territory, enabling the visualization of the hidden assets which will promote a proactive synergy among local actors. Reactivating all source of territorial resources in order to anticipate a local development (Barbero,2012). The creation of such relationship network promotes a general wellness improvement in the community, activating a cash flow between the various system participants: “the cultural and value systems are so spontaneously redefined, with direct environmental benefits” (Bistagnino,2011). The SDA acknowledges territories to be understood in a holistic overview, encouraging proactive collaboration among local actors and simultaneously generating innovative decision-making strategies to conceive future productive activities sustainably.

Following that approach, the SDA is understood as one of the most effective expertise on enhance future CE strategies and to find innovative anticipative paths for urban transformation, economic restoration, and social cohesion. Achieving an effective CE vision which generates a wide range of services fostering local

resources and therefore urban transitions (EMF, 2017). Such CE strategies are synthesized by the EMF on the ReSOLVE framework on six business actions: Regenerate, Share, Optimize, Loop, Virtualize and Exchange. Furthermore, translated by Prendeville et al., 2018 on a conceptual framework of a Circular City which delivers an overview from which to understand the ways CE could demonstrate in an urban environment.

Based on the previous, to allow an effective approach towards Circular City framework (CCF), the SDA through a Holistic Diagnosis (HD) tool delivers an anticipatory instrument for territorial development, that delivers new starting point for system mapping (Battistoni, Giraldo Nohra, 2017). Enabling an overview of such complex urban scenarios, in order to trigger a new economic model that arises from the appraisal of the resources offered by on post-industrial cities. Through a transdisciplinary approach, it invites actors from different sectors such as governments, civil society, and industry to co-create CCF strategies undertaking bottom-up and top-down. Allowing all local stakeholders to pull different economic activities that coexist to deliver social and economic welfare, which are the impacts of the CE fostering urban transitions. On the quest of flourishing resilience in cities, How can territorial thinking in post-industrial areas foster CCF to address the current environmental and economic challenges of society?

This paper aims to delve into a better comprehension on the SDA tool HD to identify CE strategies which are economically self-sustaining and which supply flourishing livelihoods for the economic, ecological and social regeneration of deprived urban areas result of deindustrialization processes. To exemplify this, it is intended to examine the case study of the post-industrial area of Mirafiori sud in Turin, Italy. Focusing on the results of HD study approached in the area which was tailored to the characteristics of the precinct to deliver systemic approaches for urban transitions within CCF strategies that can be cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. As a result of this holistic overview, it is aimed to foster urban resilience by delivering innovative strategies addressing new economies shared between public authorities, civil societies, and industry/SMEs.

Moreover, this paper broadens the results of the HD analysis on Mirafiori area on the lens of CCF at multiple levels such as : (a) On the technical level based on the components of the urban metabolism networks through whi-

ch will result in the creation or redesign of local, circular supply chains (b) On the social level enabling citizen-based ownership of local resources on post-industrial areas. Through co-designing, co-creating, and co-implementing of the CCF in partnership with local stakeholders, who will participate in the development of new protocols for the integration of CE strategies. (c) On the economic level through systemic approaches

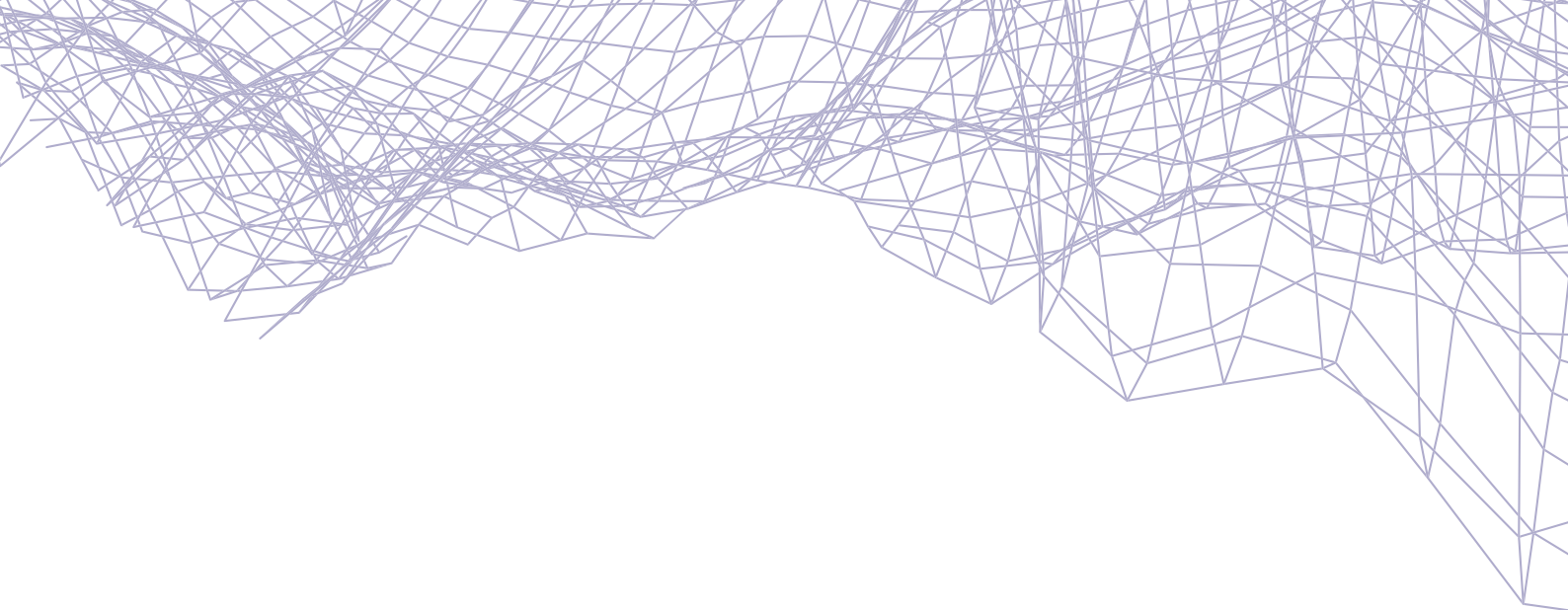
boosting circular business models for products and services, the output will be a framework with strategies for post-industrial areas highlighting market opportunities and public-private partnership models for circular productive activities (d) At Policymaking level these results will aim to change local policies on post-industrial areas and, fostering a better governance and disseminate innovative solutions towards a CE.

According to this, the need for territorial thinking on complex phenomena scenarios can be an efficient way to interpret and give solutions. In order to overcome the systemic effects of de-industrialization and reactivate economic growth, post-industrial cities have had to reactivate their urban fabric through circular strategies, fostering a transition into a productive and stimulating place to live and work in that would restore residents' sense of belonging and attract investment. Moreover, the SDA it is poised to be an instrument which benefits all stakeholders leading them to paths where all can reach an effective sustainable development creating new scenarios of economic profit and cooperation (Barbero, 2017). Eventually, this holistic approaches on post-industrial precincts such as Mirafiori shall foster urban transitions and evolve the current planning and policy environment, as a result, the design and implementation of city development strategies on CE. On that context, this expertise pretends to turn into a role model methodology for cities with industrial legacy. Fostering local actors towards sustainable development and better governance, disseminating innovative solutions to reinvent and shape more cohesive post-industrial cities.

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