Chapter 3
Cities as Enablers of Innovation

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3.1 Innovation and Cities Interplay

Cities embody an organisational climate (Jacobs 1969a) enabling and catalysing innovation and are by nature innovation generative systems They are considered key environments for the emergence of innovative interactions and relationships: creative and innovative industries tend to localize in or in proximity of urban environments, thus taking advantage of shared knowledge and a density of specialised and potential customers, suppliers, designers, experts and workers to create new tools, technologies, methods, instruments, products, processes, policies and services (Asheim et al. 2007; Pratt 2008; Reimer et al. 2008; Stam et al. 2008; Therrien 2005). Innovation processes in cities benefit from the diversity and accessibility to modern infrastructure, providing a range of stimuli (and recent research looks at such stimuli as positive externalities) which in larger cities are richer in number and potential: firms operating in big cities tend to be more innovative, agile and creative than in small ones (Duranton and Puga 2004; Stolarick and Florida 2006).

Furthermore, cities hold the "right" mix and concentration of resources to trigger, generate, foster and catalyse innovation, but also the greatest need to face the large challenges related to sustainability and economic and social justice (Dvir and Pasher 2004).

The vibrant relationship between innovation processes and urban dynamics is often questioned as a key factor in the attempt to promote positive change both in

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terms of economic development and sustainable solutions to societal and environmental problems.

> Cities provide an ideal environment for innovation as they offer proximity, density and variety (Athey et al. 2008).

Cities are therefore scanned thoroughly in order to sense all potential cues of their capability to set the innovation cycles in motions. They are mainly considered to be *cauldrons* (Leon 2008) where the combination of people, organisations, resources and infrastructures generates a *turbulent ecosystem (environment)* which in turn fuels creative processes (Johnson 2008). As Athey et al. (2008) point out, in this view, cities support innovation indirectly by acting both as *urban hubs* and *local links*. The capacity of cities to act as hubs resides in their role as gateways to accessing different *markets* (local, regional, national and international) combined with a series of urban *assets* (infrastructures, property, skilled workforce). On the other hand, they provide *links* to specialized *networks* (formal/informal, public/private) and *institutions* (government, agencies, …), which can be critical in the different phases of the innovation process to enhance a creative idea from a seminal development stage to its consolidation and dissemination (e.g. by adding inputs and contributions from different areas of knowledge and expertise or by levering innovation up to provocative institutional change).

Furthermore, the correlation between cities and innovation in present times can also be regarded from a different perspective. In times of vital rethinking of our development patterns in order to contrast global warming and its several threats, cities are themselves concrete material for innovation:

> Cities are good at generating problems and the city fabric is problem-rich. Large groups of people living and working in close proximity put strains on natural resources and energy. Congestion puts transport systems under stress and the high costs of land mean intense land use. While individual consumption of land and the natural environment may be relatively low, total consumption in cities is very high. Air pollution, insufficient waste treatment and high contamination levels may engender health problems, for example. Furthermore, in cities, redistribution of income and power between persons and organisations with different innovation and learning capabilities lead to conflicts and undermines social capital. This is a general phenomenon in the globalising learning economy, but it is accentuated in cities (Johnson 2008).

Being the areas where problems related to unsustainable resource consumption (soil, energy, water, food, …), congestion, air pollution, migrations, social exclusion …, assume a critical dimension in terms of actual liveability, cities challenge the same concept of innovation by adding a feature of long-term positive effects to the innovation social assessment framework. Urban populations make sense of innovation in the framework of their complex mental map of physical and social relations. In order to be accepted an innovation has to potentially become functional to a "way of" living the city deeply rooted in the behavioural patterns of its inhabitants, or to be so far-reaching to induce a process of behavioural change. Cities therefore become the final testbed for innovation produced elsewhere or with

no sense of urban dynamics and, at the same time, they nest/incubate sprouts of innovation generated from the city's capability of creative problem solving.

The city is hence a hotbed for creativity and innovative culture and a place where different operating groups (companies, public authorities, NGOs, citizens, start-uppers, entrepreneurs etc.) receive continuous stimuli to engage in product or service innovations that fulfil specific needs (market, organisational or community).

This creative process generates a constant need for *learning and relearning* the inhabited space by different people as a response to different needs (McFarlane 2011) and as a reaction to innovation generated within or imported into the city. Through this continuous activity of re-setting and re-defining (design) networks, tools and (political) agendas the city is described as a *learning machine* (McFarlane 2011): a tightly coupled combination of systems, which react and adjust to change, generated through the direct experience of being involved in the production of new knowledge and learning which is connected to the transformative process of innovative ideas into new products, services, procedures, organisations. The city itself is hence defined as a *territorial system of innovation* (Johnson 2008): a complex and dynamic framework *that includes people, relationships, values, processes, tools and technological, physical and financial infrastructure* (Dvir and Shamir 2003; Dvir and Pasher 2004). It is therefore the ability of the system as a whole to produce new knowledge and cope with change that defines its *innovation performance* (Johnson 2008).

As a consequence, whether innovation is generated by networks within the city (firms, groups of citizens, scholars, institutions) or imported from other networks or cities, a phase of embodiment in urban knowledge is crucial and constitutes a specific phase of product development, whose outcomes can be much different from the original idea. These non-linear and unpredictable developments are distinctive of urban dynamics, where a multitude of actors work together with their creative energy, implicit/tacit design capabilities, shared problem-solving strategies, propensity to learning and experimenting, capacity to generate new, economically sound and valuable solutions and ultimately growth and jobs for themselves and other people.

Cities are also places in which periods of relatively high and diffused welfare can suddenly be interrupted by outbursts of stagnation or crisis, putting pressure on the public sector's budgets, especially in delicate areas such as unemployment and social or environmental services. These phenomena are also generative of innovative ideas produced by local institutions, but mainly by active local communities, who can be facilitated or prevented in their operations by context-specific conditions.

The type of knowledge produced through these processes is, as a result, *spatially sticky (*Johnson 2008): its key features are rooted *in the minds and bodies of agents, in the routines of firms and, not least of all, in the relationships between people and organisations*. This makes the transfer and portability of ideas and solutions, from one city to another or to a different context, a complex process, which might involve a significant rethinking of the original concept.

Analysing the elements of the interplay between the city and innovation processes is the gateway for Design Enabled Innovation initiatives to be scaled up or replicated across different contexts.

3.2 Five Interfaces of the City Relevant for Innovation

In the search for the most significant elements/components/areas of interaction between the city and the development processes of new ideas, products, services, etc. distinctive urban elements can be considered as relevant. To these components pertain specific resources which separately, but more often in combination, can fuel the idea and product development process increasing the generated added value. It is in these areas that *'hidden, scattered and badly utilized resources'* (Hirschman 1958*)* can be identified and mobilized in order to boost the creative process. A process that, according to the specific situation of the urban context can be initiated both by supply (firms, public or private institutions) and demand (groups of citizens, associations, consumers,…) (Johnson 2008).

Every city presents a specific combination of these layers of attributes, which ultimately describe its unique identity and its potential capability of enabling the conditions for creative innovation processes to set-in.

Five of these dimensions could be especially significant in relation to Design Enabled Innovation: 1. The City as a market place; 2. The City as a problems lab; 3. The City as an idearium; 4. The City as a resource pot; 5. The City as a political arena.

Historically cities are market places, areas where people gather to trade and make deals. Access to differentiated markets is one of the greatest advantages of urban locations (Athey et al. 2008). Firms can benefit from the proximity to a significant choice in terms of suppliers, labour and costumers and thrive from the interaction with demands and offers coming from local and global markets which have their terminals in the city.

A particular type of market, subject to its own rules, is the labour market. Cities differ in work culture and can develop specific environments characterised by the concentration of specialised competences and skills connected to a certain industrial/service sector or to a recurring organisational pattern. These environments can promote and support (or hinder) the exploitation of creative ideas leading to production and to organisational and spatial change.

When talking about innovation, financial markets and, particularly, access to financial resources and funding is crucial:

> Stock exchanges, banks, joint venture funds and other financial institutions can serve as engines for innovation. However, the potential of these institutions to drive innovation should not be taken for granted - it requires smart, responsible and innovative attitude from all the stake-holders (Dvir and Pasher 2004).

Markets not only work as suppliers of resources and selling opportunities for companies, they also act as demand generators. Stimuli to develop new products, ideas and creative networks can originate from market trends (both successes and failures) and analysis. This is nevertheless a simplified way for companies to look at the urban sphere: As a static and easy to handle system for marketing. This can mislead choices and decisions for innovation to be scaled up in urban environments. The urban sphere and its complex networked nature interact with human knowledge to determine behavioural patterns which are hardly interpreted by statistical analysis, but rather related to the way individuals relate to the networks and interact through them.

On the other hand, hints can also come from marginal and hidden niche-markets. The urban market is particularly dynamic in this sense. Cities often present lab-like situations (informal markets, trading zones, Balducci 2001) where firms' contribution can be crucial to bringing an idea to life and at the same time represent a market to be developed for innovative companies.

Awareness on emerging new needs can create opportunities for new lead-markets to settle–in through the creation of innovation networks (Cappellin et al. 2015).

The city as a problem lab is naturally design-oriented. The wicked (or ill-defined) nature of urban problems (Ritter and Webber 1973) can only be fully understood by attempting their solutions. This means constantly revolving from the problem definition to the solution area, creating cycles of experiential learning (Kolb and Fry 1974; Stradtemeier et al. 2010).

Understanding problems by attempting solutions for them represents a way cities can develop experimental and learning abilities. This requires full awareness of the complexity and uncertainty of any city transformation and, at the same time, of the innovation potential of experimental approaches to problem solving. Awareness of global problems as drivers of change, such as climate change and peak oil consumption, demographic change, social inclusion and equity, globalisation etc. needs to be translated into the local framework of opportunities and resources available, as well as into the situated problem definition (Pinnegar et al. 2008). Innovation in these cases might mean to rethink the built environment, mobility modes, consumption patterns, urban behaviours, etc. Cities are places where new lifestyles and production systems are, and can be, tried out. They are the meeting points for those who share a common vision on problem and believe to be able to promote such significant changes. Thus what is interesting is that the precise way in which cities play out their laboratory function significantly depends of the way they are able to work on self-definition. Change quite often comes in the form of "what a city could be" according to an operational definition of its main problems/opportunities.

For instance, Schindler (2016) discussing the several options for reducing water and energy consumption in lawns keeping, investigates several experimental options for changing this practice of American identity. Here, experimental, laboratorial initiatives have both the role of better learning about the problem as well as developing a different identity practice. In a sense, in the laboratorial approach, the

potential for achieving value creation is embedded in addressing global challenges and at the same time targeting practices.

Furthermore, the *city as an idearium* refers to both the diffuse ability of a city to envision solutions to the high number of problems it generates and the capacity of cities to catalyse creative energies, mainly by attracting skilled work-force.

In the knowledge economy the capability of a context to develop tradable concepts and design solutions by enabling competent actors is key to the success of a local *system of innovation* (Johnson 2008). Cities are the places where ideas and knowledge are produced, processed, exchanged and marketed (Van Winden 2014). The capacity of a city to favour the flourishing of creative thinking and to support the production of knowledge is a key anchor for innovation processes to nest in.

The idearium is the interface between local, situated networks and general thematic ones. The openness of the system towards inputs coming from the outside expands local innovation capacity. New information technologies permit the simultaneous dispersion and concentration of economic activity, which allows producers in large, productive urban centres to benefit from local knowledge flows by remaining anchored to a specific location, as well as to global knowledge flows and markets (Castells 2001). Cities, through their hub function, facilitate the access to knowledge networks and provide visibility to ideas in search of willing developers. Innovative firms can benefit from this environment by being able to integrate external sources of knowledge in their internal processes or to change them accordingly (Simmie 2003).

Cities differ significantly in their capacity to provide access to this kind of input. Knowledge networks in the city can be open and easily activated both by niches and regimes, but networks can also be closed and reluctant to interact with outside members. Furthermore, this field also presents a tendency towards resource concentration: "*The minority of cities at the top of the emerging 'international hierarchy of regions' tend to transfer specialized knowledge among themselves*" (Wolfe and Bramwell 2008: 176). The openness of high added-value knowledge networks is hence a critical indicator of a city's attitude towards innovation. Nevertheless, innovation processes can be set in motion also by non-expert knowledge and intuition. It is therefore interesting to look at niches, when thinking about ideas and knowledge generation, including from a social and spatial point of view. In fact, one of the reasons for the city's capacity to enable creativity is its richness in so-called "third places" (Dvir and Pasher 2004): spaces offering a comfortable time-space, where diversity and connection can inspire spontaneous creation processes and a feeling of safety can allow risk taking, informal knowledge management, interaction and contemplation. The city culture towards these kind of places is telling of an environment rich with opportunities for the sharing of ideas and their enactment.

The city as a resource pot considers the several resources available within a city framework both in terms of quality and variety. Besides knowledge and ideas, cities offer access to various assets that can be critical inputs of the innovation process. Among others, the most significant can be:

- People, with their creativity and talent;
- Financing: From Maecenases, to innovation policies in the cities;
- Research institutions: universities, innovative clusters, hubs for innovations; Universities and higher education institutes are key actors in urban knowledge networks. Athey et al. (2008) identify four key functions of research institutions in promoting innovation:
  - source and main driver of commercial innovation potential;
  - hub for networking, collaboration and knowledge exchange;
  - providers of collective goods (e.g. equipment- including prototyping technology, virtual conferencing facilities and virtual design studios to facilitate real-time collaborative working across large distances);
  - founders of innovation communities.
- Infrastructure: physical and social networks; public and private services and facilities;
- Place: estates, working spaces, laboratories, meeting places, conference halls, etc.
- Symbolic meanings: if creative processes can be understood as the recombination of previous elements with new meanings, it is evident that the spaces themselves constitute cultural repositories that can be reused in new cultural processes in innovative ways.
- Lifestyles. Urban lifestyles advocate freedom, openness, novelty and mobility. Therefore, people living and working in the urban environment are more prone to change and innovation.
- Knowledge as the key resource made available in the city: it is not to be considered available in terms of knowledge management tradition, rather referring to the constant re-creation of the urban sphere by means of knowledge flows, thus implying a different notion of knowledge more coherent with the "compositional knowledge" which Amin and Thrift (2002) consider, knowledge with its sources, associations, and relations, i.e. knowledge flows within the network.
- Power: openness and transparency of decision-making processes; openness of the institutional framework (regimes);

The listed resources are of different nature and all interconnected. They can be mobilised individually or in synergy with different levels of intensity: regimes usually have a greater power on resource mobilisation, while niches can exploit them creatively in order to support the value generation process. Coalitions of operators can be created in order to access or manage a specific resource. The way through which each city is able to activate its own resources is revealing of its attitude towards action and change.

Lastly, the problems of maintaining urban order are not necessarily solved by technical innovations alone. Often both problem and solution are more institutional than technical, while conflicts and disagreements about the distribution of costs,

benefits and power often block the solutions and make administrative and political change essential (Johnson 2008).

Going back to the seminal work of Mintzberg (1985), which gives us a comprehensive study into organisations, a political arena is raised when politics and conflict capture an organisation as a whole or significant part. Mintzberg identifies four forms of political arena (p. 141): *confrontation*, which is characterized by conflict that is intense, confined, and brief; *shaky alliance*, which is characterized by conflict that is moderate, confined and possibly enduring; *politicized organisation*, which is characterized by conflict that is moderate, pervasive, and possibly enduring; *complete political arena*, which is characterized by conflict that is intense, pervasive and brief. All four forms are characterised by diverse conditions and geographies of conflict, and also shape coalitions in the organisation that activate political discourses varying from specific problematic situations to ideological and value-related issues. Moving to urban environments, the political arena is any space-time opportunity for public debate regarding the common good. Political arenas in cities have the power to shape the urban political agenda: their conflictual/debating nature can be the consequence or driver of innovation initiatives. Political arenas, in fact may have a top-down or a bottom-up origin depending on the change pathway activated in the socio-technical system: they will be activated by a regime in the case of a transition pathway, while in the other instances the arenas will be activated by niches. In all cases they swing between regime and niches, they represent the opportunity for innovation and change to achieve transformation at regime scale.[1]

Relevant to this interface is the ability to manage and deal with conflicts and disputes in a way which is productive of knowledge and reflective of values thus developing the largest possible advantage from it, i.e. transforming it into *InnoCracy* spaces (Dvir and Pasher 2004), i.e. spaces for a democratic approach to innovation and change in response to contemporary global challenges.

Finally, due to their debating, the political arena represents the spatial and temporal sphere for developing collective and shared knowledge on values, introducing the scape as the leading element of knowledge production dynamics.

In conclusion, the five dimensions can be defined as interfaces through which the city interacts with innovation processes. Those processes vary significantly

[1]An elucidating example of the creation of a political arena is given by Nelson and Ehrenfeucht (2016) and the re-settlement strategy in Louisiana to deal with the higher frequency of hurricanes, which highlight that people oppose relocation in principle and take reflective actions that respond to their specific situations and their knowledge about likely future conditions, including when to accept or oppose relocation. People's situations and perspectives change over time forcing them to make decisions in dynamic circumstances. Decisions in such conditions are generative of a political arena where reflections do not only touch individual spheres of action (families and their choice between relocation or staying) but they include the larger community levels as well as the institutional dimension (possible policies to sustain different options, to face new probable events, to re-think institutional roles and efforts, to guarantee equity and security to the entirely exposed territories).

depending on the maturity stage and the way the innovation process enters the city through its networks.

A common feature in almost all elements informing these interfaces is that of being terminals or hubs of local and global networks. Connected to the five interfaces is in fact the networked nature of cities (Castells 1996, 1997, 1998): networks are the way those interfaces work. Cities are spaces of flows (1996) enabled in their growing intensity by communication networks. Communication networks are not space-indifferent: rather they are made of situated hubs (the cities themselves!) where these networks interweave. In these situated hubs different relations and different hierarchies between them are activated (Amin and Thrift 2002) so that every new relation that connects to a city, becomes part of its network, i.e. part of the city and its intrinsic capacity (intrinsic to a network) to create and recreate knowledge.

The global city is a productive entity in which individuals (with different skills and abilities) create networks for the exchange of knowledge, financial resources, and products. It is in the city that the combination of different resources and dimensions generates different kinds of networks relevant to innovation processes; on one hand, business networks help co-ordinate decisions made by individual entities (people, firms or institutions); on the other hand, knowledge networks enable the transmission of data, information, and knowledge (Lambooy 2010; Martin and Simmie 2008). Urban proximity and connectivity help business and knowledge networks to form. Proximity also helps creating a shared sense of identity, which binds different players together in a community-like social network (Athey et al. 2008). One of the most relevant functionalities of cities is to provoke possibilities of interaction, cross-fertilisation and direct collaborations between different actors. It is precisely in this functionality that the connection between individual creativity and its social contextualisation lies. Aspects such as the density of stimuli, the creation of formal and informal meeting areas, the management of access flows or relations with the urban context act as conditions which potentially promote or limit the possibilities of materialization of a given level of relational capital.

These networks make the city a permanently changing, unstable set of forces and potentials seen as a never-ending project in the eyes of all involved (Gutzmer 2016).

The urban sphere is a cultural element that cannot be reduced to one set of key features. It is open to interaction with every other social or cultural sphere acting inside or outside it. Being complex open systems cities do not have a clear inside or outside which allows them to activate strong interconnections among many spheres as well as learning opportunities at several different levels of the network for all the spheres connected to them.

As innovation is clearly an issue of knowledge management for (new) knowledge creation, it is crucial and strategic to any organisation aiming at innovative production, to be effective in plugging into such networks, aware that they have no stable hierarchies and that they are constantly remodelled by means of networking

improvisation (Gutzmer 2016), continuous linkages and de-linkages taking places within these hubs.

3.3 Scaling Innovation Up and Out Among Cities

Networks make the city a permanent changing, unstable set of forces and potentials seen as a never-ending project in the eyes of all involved (Gutzmer 2016) actors.

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As innovation is clearly an issue of knowledge management for (new) knowledge creation, it is crucial and strategic to any organization aiming at innovative production, to be effective in plugging in such networks being aware that they have no stable hierarchies and that they are constantly remodeled by means of the networking improvisation (Gutzmer 2016), continuous linkages and de-linkages taking places in these hubs. These mechanisms and dynamics are crucial to scaling up and scaling out innovation as well as to urban economies.

In her seminal book on The Economy of Cities, Jacobs (1969b) presented an original narrative on why and how some cities grow and others stagnate and decay, based on a critical reading of earlier contributions by many scholars—historians and archaeologists in particular. Jacobs argues that the explosive economic growth derives from urban *import replacement* which occurs when a city begins to locally produce some goods that it formerly imported; this concept can be considered seminal for visualizing and interpreting contemporary dynamics of innovation scaling up and scaling out within urban economies.

In the mid-20th century Tokyo imported a lot of bicycles, which created a large market for repair shops. Eventually, those shops began making their own parts, which led to directly manufacturing whole bicycles and later exporting them. According to Jacobs, import substitution, however, can only happen in a large city or metropolitan area, for two main reasons: (1) small sized towns or rural villages are unlikely to generate enough demand for imported goods (e.g. bicycles and their spare parts), a necessary condition for import substitution to occur in the future; and (2) only large cities can provide the local culture and dense network of spatial relationships required to establish manufacturing where it did not exist before (e.g. teaching factory workers how to transform the components of a bike into a full product). As a matter of fact, Jacobs' distinction between cities (and metropolitan areas) on the one hand, towns and villages (small towns) on the other, is not based on the size of population or the territorial extension, but uniquely on the capacity that the former, not the latter settlements may have to generate stable growth and job opportunities from their own local economies.

Jacobs also claimed that not only does an increased local production of goods and services create extra value to the city (because, in our previous example, the price of an assembled bicycle in Tokyo is higher than the total cost of all its components, even if still imported), but this extra value is actually spent, at least in part, on different goods and services that are still produced in other cities, thus replacing old with new imports in a way that does not penalize cross-city trade, creates further opportunities for local industry to engage in urban import replacement, and ultimately produces a self-reinforcing cycle of growth.

In the complex scenario so far described, our proposal is to go back to Jane Jacobs' concept of import replacement and transfer it from the production of goods and services to the circulation, adoption, adaptation, diffusion of new and innovative ideas (of innovation). Indeed, one of Jacobs's chief insights is that import replacement leads to a diversification of available products for consumption and investment within a city and this brings positive impacts to local infrastructure and skills, therefore innovative capacity—not only production levels. Dealing with "old" things in new ways forges the path to doing completely new things never thought of before (Satell 2013). If "old" is assumed here as the import of an innovation in use elsewhere, it becomes clear that the engagement with the context is the key of the Jacobs' concept.

Looking at the larger and more open complexity of the contemporary cities, being aware of the networked nature of their interdependence and their inner dynamics, it is possible to reframe the import replacement concept making it more coherent with the concept of transition rather than the development one.

The two concepts of innovation scaling up and scaling out refer both mostly to the sphere of the innovation production system; in the first case it is related to the number of users or adopters, in the second to the change of the production system itself. The two concepts do not take into consideration the wider contexts and system where innovation is in action. The import replacement concept drives a reconceptualization of the two dynamics within a more systemic framework that takes into account that:

(1) the adoption of innovation does not depend uniquely on the quality and goodness of the innovation per se, as in the vision of den Ouden[2] (2012), rather it can be enabled, facilitated, pushed, sped up by the conditions of the urban context; it can be conceptualized more as an embedment process in which the context plays a relevant role;
(2) the process of scaling, in addition to the transformation of the innovation production system, can determine and contribute to the transformation of the context towards transition; it can therefore activate a process of synergy with other innovation spheres that ends up in value creation, networked and institutional learning, so affecting the regime level.

[2]"(…) if the [innovation] experience is pleasurable, it will also help the widespread adoption of the innovation (…)" (den Ouden 2012, p. 15).

In a pill, the Jacobs' concept of Import Replacement suggests a more systemic, context related view of innovation scaling up and scaling out, not privileging the product/service production system rather considering the urban ecosystem (including networks having here one or more active nodes). Scaling up assuming the meaning of context embedment and scaling out assumes the one of a contribution to transition processes.

3.4 Framing the Urbanscape

Although cities are generally considered relevant and rich environments for innovation to be ignited and developed, it is evident that cities can be differentiated for their proneness to innovation. From now on we define "Urbanscape" as the set of conditions making a city a prone or adverse environment towards innovation. Such conditions have been described under various concepts. Pelling et al. (2012) for example identify five 'drivers for adaptation towards change'; similarly, Kallis (2017), interpreting Norgaard (1994) talks about 'spheres of activities explaining co-evolution'. In both cases, drivers and spheres, the five elements are: technology, nature, values, knowledge, and institutions/social organisations. Harvey (2011) contributes to such a reflection identifying seven contributing factors: technological and organisational form, social relations, institutional and administrative arrangements, production and labour processes, relations to nature, the reproduction of daily life and of the species, and conceptions of the world.

Working on the overlapping meanings of spheres and factors while also considering the contribution by Landry (2008) in terms of the creative city, we have identified five dimensions as contributing factors to the city's proneness towards innovation: institutional capacity, cultural vibe, environmental awareness, social activism and integration, and entrepreneurial culture (Fig. 3.1).

In the authors' understandings, the five dimensions of the Urbanscape, are strongly related to the way a city manifests its proneness or its resistance to change;

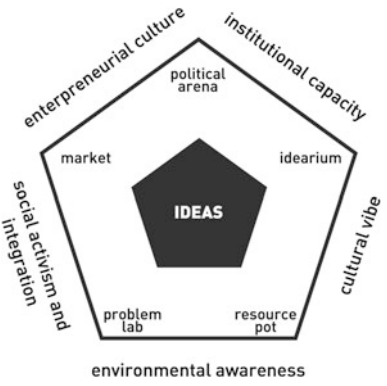

Fig. 3.1 The Urbanscape

they represent the enabling dynamics of the innovation capacity of the city. These enabling dynamics shape, orient, guide, activate the five interfaces described above as modes of interaction between the city and innovation processes. In a way, they shape the interactions between the regime and the niches. They have a precise, though complex, infrastructure that is in fact the regime as it is defined by Grin et al. (2010) and summarized in paragraph 3.2.1.

The Urbanscape is the result of the scape's interpretation made by the city as a complex system of actors and networks. It is a kind of *climate* of the city making it more or less comfortable for innovation processes (Fig. 3.2).

The Urbanscape intended as climate, results in the complex, rich and intense system of flows that any city represents and embodies; it embeds the dynamics of creativity in the city (the networks of flows that a city activates and is part of is also the key to its creativity). Florida (2000) with his idea of the creative class, and Landry (2008) with his creative city concept, have discussed and valued the role of creativity in socio-urban environments. It is with Gutzmer (2016) that the idea of city creativity is strongly related to the capacity of finding and creating new connections of, and consequently new operators' roles within, the network itself. It is through these dynamics that new knowledge is created.

> But this knowledge can no longer be understood as "rooted" in one superior source, it has its roots anywhere. There is no per-se knowing where knowledge might be created or where innovation might occur. For any actor who wants to find out where innovation might be generated in an urban setting, there is no alternative in the development of rather fine senses as the potential generation of newness in the urban field (Gutzmer 2016: 16).

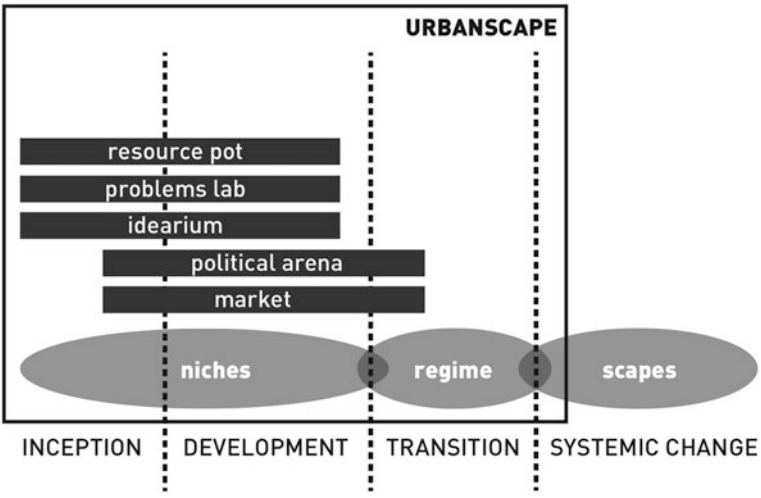

Fig. 3.2 Urban interfaces for innovation in the framework of the Urbanscape

A city's proneness towards innovation cannot be understood while disregarding urban knowledge, i.e. following existing knowledge flow networks and tracing active connections.

Institutional capacity is the ability of institutions to perform their functions. Over past decades, the concept has been often articulated in relation to that of governance, in particular to the governance model and structure used to perform such functions. According to Patsy Healey, institutional capacity deeply depends on the quality of local policy cultures. Some are well integrated, networked, and informed; usually they clearly reveal their sources of power and can easily activate internal and external resources. Others are fragmented, disconnected and do not work in a certain dynamic of power and knowledge (Healey 1998). Different governance models, i.e. different types of informal and formal partnerships, different networks and arenas involved and engaged in institutional functions, give rise to different abilities to cope with problems and changes. Although openness has recently become a relevant property of institutional capacity, the effectiveness of the openness is constrained by the institutions being able to coordinate and align a sound city identity and self-definition process; when a strong, clear and coordinated image of the city is lacking, no alignment of meanings and value is possible and any innovation risks being dispersed into the urban environment and it becomes hard or even impossible for innovation to be embedded in the fabric of a city.

Cities are stages for cultural activities that range from street art, underground music scenes, and diverse design, digital, audio, community and performative happenings as well as the well-known and more published cultural events and exhibitions. The intensity of such activities is the cities is an indicator of their cultural vibe. The *cultural vibe* of a city is defined by Montalto et al. (2017) as the cultural 'pulse' of a city in terms of cultural infra-structure and participation in culture (2017: 15). It is the output of the tangible and intangible assets which makes cities attract creative talent and stimulate cultural engagement: cultural life is a key element in a city's quality of life and a 'soft location factor' to attract talent; also participation in cultural activities increases people's networking among each other and with the place where they live, enhances their creative skills and improves their psychological well-being thus increasing cities' attractiveness towards local, national and international audiences to participate in their cultural life. This is the most basic and yet crucial outcome that cities expect as a result of their engagement in promoting arts and culture (Montalto et al. 2017: 16).

There is a growing phenomenon of *environmental awareness*: more and more people understand and defend the need to sustainably manage our planet's resources and ecosystems. Steven Cohen (Executive Director, Columbia University's Earth Institute in 2014)[3] wrote: "This has nothing to do with environmentalism or ideology. People, young people even more, know that we are

[3]Cohen S. (2015) *The Growing Level of Environmental Awareness*. A blog post: https://www.huffingtonpost.com/steven-cohen/the-growing-level-of-envi_b_6390054.html (accessed: December 2017).

stressing the planet's finite resources. This awareness, which could be considered a paradigm shift, is exerting pressure on many of the day-to-day actions routinely undertaken by corporations, government agencies and non-profits, along with behaviours seen in communities and households. Individual behaviour is changing as well". Cities contribute to widening this awareness when they engage, and are engaged by, citizens and companies in improving urban performances towards sustainability and, by doing this, activate collective experimental initiative for new knowledge production.

Learning is a social experience (Dewey 2007) and *social activism and integration* can be considered crucial learning experiences often taking place in urban environments. Defined as the attitude of taking an active part in events and movements, especially in social contexts, social activism and the need for integration are increasingly driving movement-like initiatives. Some scholarly works note the specific urban nature of contemporary social initiatives and activities. Shoene (2017) explored how urbanity and urban resources are predicting factors for citizens getting engaged in social activism and integration. Social activism and integration initiatives typically embed themselves in, and create, new networks in the cities and this is when and where "space of hopes" (Harvey 2000) are available. Uitermark et al. (2012) sustain that the city is constitutive of social movements, which are usually conflictual dynamics: density, size and diversity contribute to conflictual movement creation but diversity represents the opportunity for such movements to transform conflicts into opportunity for innovation.

To be creative, and possibly innovative in and for the city, companies have to behave in a network-like way, adding new links to the networks they interact with. Entering the urban sphere and becoming urban means to have the capacity to generate relations and infuse them into the urban network thus contributing to the city as a 'machine for learning' (McFarlane 2011). This explains why the urban sphere is such a focus point of innovative business strategy (Gutzmer 2016). The *entrepreneurial culture* of the city is consequently related to the way a city provides entrepreneurs (and innovation actors) with the opportunity to understand in a more complex and multidimensional way the connections and communication processes that drive its cultural as well as economic activity today.

Considering the Urbanscape, it is clear that innovation in the city is no longer something carried out in isolated laboratories; in the city, innovation agents can integrate their laboratories into a network of urban productivity. This is because cities are the environments where basic inputs are potentially transformed into elements of innovation, and eventually into new market reality. Any company or innovation actor isolated from any urban reality may find it difficult to sustain its innovation program, not only due to the market being concentrated into urban environments, but because of the isolation of the urban knowledge and relational networks (Gutzmer 2016).

To plug into the networks some creation of common meanings is necessary so that interactions become possible. It is in the urban field that diverse actors get together physically and create certain common grounds to guarantee meaningful interactions. Therefore, it is the cities which play this exact role: and the

Urbanscape enables the alignment of meanings[4] that represents the key to new relations and therefore to the creation of new knowledge.

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