

Chapter 10

Urban Planning and Design Centred on Health Metrics



Abstract Recent years have been marked by numerous initiatives aimed at promoting experiments in the field, implementing the WHO's call in 2013 to move from the rhetoric of numerous policies aimed at promoting health and safety in the city to practical activities. All planning scales are asked to provide resilient design proposals capable of repositioning and reprogramming urban spaces in order to satisfy the needs of the community with respect to the potential impacts of urban transformations on the health and well-being of people. Reference to the context is fundamental, but it is also necessary to develop synergies among the different strategies and the different scales of the project. This includes a process of internal and external consultation in which the local community plays a fundamental role as the basic expression of the present and future social sustainability and resilience of the project. It is precisely in terms of resilience that some important cases of strategies, actions, and projects are found in Europe. Rotterdam in Holland and Copenhagen in Denmark are among the top examples.

Keywords Local community, neighborhood planning · Health metrics
Micro and macro urban design · Resilient plans and projects

10.1 Resilient Design Proposals for a Healthy City

The recent years have been marked by numerous initiatives aimed at promoting experiments in the field, implementing the WHO's call in 2013 to move from the rhetoric of numerous policies aimed at promoting health and safety in the city to practical actions (Rydin et al. 2012).

In 2015, for example, the English NHS together with Public Health England launched a new initiative to put health at the heart of new neighbourhoods and towns. The objective was to implement policies to construct 200,000 extra homes every year for the next five years and to refine the healthy city project to centre on the possibility of shaping places to radically improve residents' health and integrate health and care services. Ten cities were selected for a program that included "global expertise in spatial and urban design, national sponsorship, and increased local flexibilities"

(NHS 2015) in order to build new communities to support social cohesion, physical and mental well-being, walking, cycling, and sports. This was done via new ways of offering health and social services, new digital technologies to improve daily life, and new service infrastructures. The initiative, along with the Scottish design competition “Community Links Plus” (Sustrans 2016) and the Italian “Health City Think Tank” (HealthCity Think Tank 2016), aim to generate best practices and debates to address the themes of health and well-being, acting on the urban fabric and interpreting the urban past that plays such a role in pathologies of contemporary life.

An awareness lies in these programs and manifestos that urban design can connect data and policies to the experience of places with the possibility of transforming spatial practices and influencing the transformations that lead to positive changes for the life of people. This is a link to encourage, the connective fabric designers can use to contribute to macro and micro changes in European cities and cities around the world. The local approach recognizes and celebrates this moment: the places where we live contribute to the quality of our lives, in both good and bad ways.

All planning scales are asked to provide resilient design proposals capable of repositioning and reprogramming urban spaces in order to satisfy the needs of the community with respect to the potential impacts of the transformations and effects due to climate change on the health and well-being of people. Reference to the context is fundamental. One should try to understand, for example, relationships between: education level, family income, parks and open spaces, access to healthy food, obesity rates, etc.

Reading the interconnections among these different aspects is not enough, however, just as it is not enough to identify policies and strategies to face current social emergencies. It is necessary to determine the design’s exploratory role in order to reposition and reprogram urban spaces with respect to the potential impacts of the transformations and effects of climate change on the health and well-being of city inhabitants. At the same time, it is necessary to develop synergies among the different strategies and the different scales of the project, even through a process of internal and external consultation in which the local community plays a fundamental role as the basic expression of the present and future social sustainability and resilience of the project. It is precisely in terms of resilience that some important cases of strategies, actions, and projects are found in Europe. Rotterdam in Holland and Copenhagen in Denmark are among the top examples.

10.2 Innovating the Approach to Redesign Existing Areas: Rotterdam and Copenhagen

In the delta city of Rotterdam, the theme of urban resilience as pertains above all to the safe city has become an urban policy of turning criticalities into resources, with particular reference to the city-water relationship. The Rotterdam Climate Initiative¹

¹ See: <http://www.rotterdamclimateinitiative.nl/uk/home>.

can be considered the starting point for this experience. In turn, Rotterdam Climate Proof² is the tool that sets three basic objectives to be reached in the medium and long terms: Rotterdam—centre of excellence regarding water and climate change risk/management; Rotterdam—attractive city for new investments for the city and port; and Rotterdam—incubator of innovative applicative models/solutions to be exported elsewhere. The three objectives come together to delineate a strategy for a port city that is a model of sustainability, starting with the choice of field: coexistence with water and climate change and adopting the nature of a “sponge city”. The Water Program, which is based on developing knowledge, short-term action plans, and the necessary professionalism, as well as sharing experiences (Mezzi and Pellizzaro 2016), modifies the consolidated approach and starts from the small scale. This micro experience has a high level of flexibility in the periphery, where squares based on water become the symbol of the new public space: green and blue, flexible and temporary use in agreement with climate conditions. These are created spaces visible to the population that are experienced and shared. Kleinpolderplein, Bellamyplein, and Benthemplein are the most recent projects.

The objective of security is the starting point. The basic infrastructure of canals and basins in the water system, collecting rainwater and mitigating run-off, and the reuse of water for irrigation purposes all trigger a design cycle where the formal success of redefining the open space is only the latest step in a complex rethinking of the city’s basic infrastructure services. By changing the design approach and criteria, consolidated urban types (e.g., squares, gardens, parks, public spaces) no longer serve only for interaction, relaxation, and free time, but become fundamental elements for the safety of the city and its inhabitants.

Through design workshops, the involvement of residents and open-space users (Benthemplein, for example) contributed to examining the possible uses of the square to define its identity within the quarter and the acceptance of the project. Along with the floating neighbourhood under construction in the port area, these are significant pilot projects that are changing the face of Rotterdam, albeit always in ways consistent with its principal natural resource: water.

While the theme of water is a dominant factor, it should be recalled that the strategy of resilience is well structured. There are six areas of intervention that represent the main challenges for the city. First in order of priority, there is *social cohesion and instruction*, followed by *energy transition*, *climate adaptation*, *cyber security and use*, *infrastructure criticalities*, and *modification of urban governance*. The vision for a resilient Rotterdam is composed of transverse actions and initiatives following seven objectives: 1. Rotterdam: a balanced society; 2. Global port city built on clean, reliable energy; 3. Rotterdam Cyber Port City; 4. Climate-adaptive city; 5. Infrastructure ready for the twenty-first century; 6. Rotterdam network—really our city; and 7. Anchoring resilience in the city.

Each objective is accompanied by large actions that act as an economic flywheel as well as additional actions. The first are those that should guarantee a state of

²See: <http://www.rotterdamclimateinitiative.nl/documents/2015-en-ouder/Documenten/ROTTERDAM%20CLIMat.%20PROOF%20ADAPTATION%20PROGRAMME%202013.pdf>.

universal resilience, bouncing Rotterdam to the top of world cities, while supplementary actions should contribute with a smaller impact. This case also represents a twofold scenario between large and small actions.

The main priorities are social and human: building and reinforcing resilience on the individual and social levels. Starting with the assumption that knowledge, skills, education, health and well-being, and reciprocal understanding and respect are the central pillars of a balanced society, the administration supports and reinforces a certain number of current processes and initiatives to support the resilience of citizens and society through the Foresight Social program. Social sustainability, even in the case of Rotterdam, becomes the starting point for building all the strategies of resilience and healthy city, and education is the hinge around which change and growth revolve. This is related to the attempt to provide answers to the economic crisis, sudden social changes, and terrorist events that threaten daily life, placing people at the forefront of monitoring societal tensions and investing in social cohesion and resilience. The WE-Society Programme tries to answer to this scope, building an openness to diversity and reciprocal understanding among people as a given in maintaining social relationships among different groups present in the city. The social aspect is reinforced by the slogan “Qualified, healthy citizens in a balanced society”, the first objective for an equitable society. Education to make today’s young people competitive for the “next economy” together with the political document on public health (2016), which implements tools and actions for specific groups and problems, all seem to move in the direction of reinforcing social sustainability as the basis for a better quality of urban life.

The objectives and programs mentioned above are intersected by other projects that are more specifically oriented at transforming the physical space of the city and improving the quality of life. If Water-Sensitive Rotterdam is one of the crowning jewels, other projects have already begun. These include specific programs for the port (bioport), the perspective of the “next economy”, the energy transition, and the Cyber-Resilience Platform, Cyber Resilience Desk, Cyber Resilience Co-op, and Cyber Resilience Officer to guarantee informational security. Others include specific interventions on the basic infrastructure such as burying infrastructure to make the city smart and easy to manage and reinforcing cooperation among all infrastructure managers for a common platform to share plans and knowledge, functions and interdependence among infrastructures located below and above ground.

Copenhagen, the European Green Capital of 2014, draws on the results of long-term policies for some aspects, and those that are feasible in the short term for others. In this respect, a key example is the brief period necessary to respond to the flood of 2011, which took the Danish capital by surprise, and to initiate and already partially realize the first projects to respond to climate change.

In terms of resilience and securing the city to improve the urban quality of life, Copenhagen has relied for some time on the Copenhagen Climate Plan³, followed

³See: <https://www.energycommunity.org/documents/copenhagen.pdf>. Accessed 8 June 2017.

by the Climate Adaptation Plan⁴. The latter provides specific indications for interventions ranging from traditional open spaces—reinvented starting with the technological solutions adopted and from the flexible, temporary use for which they are destined—to updating the sewage and waste/disposal system of rain water in cases of extreme meteorological phenomena, to updating/rethinking ground floors and basements as areas for drainage. Ground floors would include additional areas to store rainwater, and basements would be used to create alert systems in case of rain in order to manage risk. These are actions and interventions aimed at preventing and managing climate change that lead to the relative transformation of the urban physical space. It is here where interest in the experience of the Danish capital lies. Beyond policies and strategies for resilience, actions initiated and realized on the micro level of planning make it clear how urban planning and urban design can affect the quality of life and health of inhabitants.

Policies enacted years ago to create a system of parks and areas for relaxation usable by all citizens and from any point in the city after a simple walk of about 15 min, and the ease of using bicycles for work/home and school/home commuting in the objective of a zero-emission city by 2025, for example, directly respond to the question of resilience. More indirectly, they respond to the request for daily movement, which is indicated as a basic requirement in preventing various twenty-first-century pathologies such as obesity, cardiovascular disease, and diabetes above all. This is a small but suitable example that ranges from citywide strategies and policies to interventions on the neighbourhood scale where, with citizen involvement, the best solutions for a city that responds to risks using liveable spaces are designed and discussed.

The theme of wastewater, which is also very pertinent to the city of Rotterdam, constitutes an important focus on which a radical intervention was operated as the result of a change in the strategic design approach: from risk to opportunity. The projects realized and initiated aim to alleviate pressure on sewer networks and at the same time to protect the city and its inhabitants; the techniques adopted refer to a cloudburst road, retention areas, and green roads, i.e., to the technological redefinition of basic (underground) infrastructures and the functional, spatial, and formal redefinition of surface areas. The application to individual neighbourhoods entails an overall renovation of public and private open space in the city and, by continuing the experimentation between neighbourhoods, creates functional and spatial connections between them, reinforcing their relationship to others in terms of community, sociality, and functionality. The project for the neighbourhood around Sankt Kjelds Plads is now an icon of change in Copenhagen and the visible synthesis among urban strategies and design. Aspects such as newly planted areas, the movement of earth to create two green dunes to increase the permeable surface area and reconfigure the pre-existing flat, monotonous space, the reduction of roadways and the creation of biking paths, and raising sidewalks to collect and drain excess water structurally and formally recount the transformation of public space and the entire neighbourhood.

⁴See: http://en.klimatilpasning.dk/media/568851/copenhagen_adaption_plan.pdf. Accessed 8 June 2017.

In this sense it is interesting to note how the Copenhagen Climate Plan explicitly dedicates a chapter to pocket parks and the role they play for health, well-being, environmental comfort, social aspects of the community, cohesion and sharing among residents and, not least, how they contribute to securing the quarter, representing “widespread green tiles” in the urbanized, impermeable fabric. It is not easy to find a call for a specific type of green in these strategic documents and directives and, in this case, a design action has perhaps still not been codified within the body of more traditional types of green areas. This highlights the multi-scalar nature of the document, the neighbourhood as a field of action, and the precise responsibility of urban planning in modifying the public space.

10.3 Between Macro and Micro: An Approach to Experimental Research

The experiences of Rotterdam and Copenhagen evince two design scales of reference for Healthy Cities: the strategic scale of urban policies, where the themes of the healthy city are found in a transverse manner, and the local neighbourhood scale where favourable conditions for experimentation seem to be concentrated. Based on the examples illustrated, the term *neighbourhood* seems to be returning to the centre of urban planning. It can be considered an experimental unit for the healthy city where a design core between the determinants of health and the quality of city public space can be sought without falling and/or seconding hygienist or welfare trends, as recommended in the Preface by Patrizia Gabellini, and even less by arriving at deterministic solutions by following pre-packaged paths.

Assuming the neighbourhood as the field for planning action means connecting to a recent past of modern urban planning. In fact, it has played a primary role starting with rationalist urban planning, which is viewed as an elementary cell in planning/designing the public and private city. The quarter constitutes the three-dimensional realization of the plan’s provisions and represents the dimension of urban design, studying quantities, functions, and distributive rules. It was also the place where uniform populations from the social, demographic, or ethnic point of view were concentrated with recurring models of social interaction and precise systems of rules and local norms. For a long time, the quarter contributed to the growth of intense community life reinforced by the sharing of experiences, conditions, and by the development of a community understood to be a complex of elements among which the rooting to the places, identity and social recognition, relationships of reciprocity, relation, and solidarity stand out. The neighbourhood was a central theme in planning theory and research in the twentieth century, the reasons for which are technical, social, ethical, and moral. The public residential neighbourhood—rationalist and/or organic, characterized by a series of single-family homes or the territorial sign of building/city—has given form to theories of domestic and urban space in response to the essential needs of the population, always proposing new forms of community.

Today, the social/demographic reality is undergoing constant change and the idea of community is continuously brought into play by exogenous historical/social factors of a temporary and transitional nature. The quarter seems to express the basic potential to be able to activate experimentation in integrating the determinants of health and the network of mobility and access, the creation and diversification of widespread green areas, the activation of participatory forms of co-design, co-production, and co-responsibility, the innovation of public spaces starting with instances of securing areas, the redesign of technological networks in response to climate change, activating responsible participation processes, and the creation of consensus for shared responsibility. In other words, these criteria are at the basis of theories of the healthy city.

In more than one experience, reference is made to the neighbourhood as a local unit to apply urban-scale directives (London, Glasgow, Copenhagen, Rotterdam) or as a new protagonist in the process of co-responsibility for and co-production of the city (Bologna, Turin, Malmö, Copenhagen). On the other hand, assuming the neighbourhood as an autonomous object of study with the relative concepts of local society, neighbourhood, and a place where complexity is tamed or exalted due to its limited size—which makes it a controllable/monitorable tile in the urban mosaic—means it can serve as an important field of action precisely due to its location, which in many cases falls between decontextualization and reterritorialization. In this case, cohesion and social sustainability can become the potential on which to work for the transformation.

In a way somewhat similar to the past, the neighbourhood can express a new planning nature. In the 1920s and 1930s, the bases were formed for what after World War II would have developed on the large scale from national public building: urban planning models to guide the city's expansion and studies of the functions to rationalize/standardize building types and prefabricate building components. It is enough to mention the super-blocks in Vienna, transplants into the existing city fabric in Berlin and Frankfurt, the growth of satellite garden neighbourhoods and their separation with parks and agricultural areas, the planning of new neighbourhoods in Amsterdam, etc. In the 1920s, the New York Regional Plan defined the concept of *neighbourhood*, arriving at the *neighbourhood unit*, which has been refined in various ways in the guidelines of the examples presented. The sociological components are integrated with urban planning requests, including studies on the relationships among residence, collective structures, mobility, and social functions such as schools, parks, and shops.

It seems clear that there are affinities next to which the suggested road can be followed. For the rest, the first attempts at a healthy city, while not explicitly declared, can be traced to eco-neighbourhoods. These express the spatial results of growing attention towards environmentally friendly themes and sustainability via careful design for the efficient use of environmental resources, healthy and energy-efficient buildings, and land use compatible with ecological/social uses/sensitivities. These aspects fundamentally unite high architectural standards, energy savings, the drastic reduction of the use and possession of automobiles, the strengthening of public transport, and the incentivization of biking/walking. The Vauban quarter of Freiburg,

the Zuidas quarter of Amsterdam, the Norra Djurgårdsstaden/Royal Seaport District of Stockholm, Lövholmen and Hammarby Sjöstad (always under the objective of Stockholm, a Fossil-Free City by 2050), and the BO01 neighbourhood in Malmö are only a few of many important examples. These are to be taken only as a partial reference since they constitute *ex novo* experimentation in many cases and not urban regeneration of the existing fabric; they also risk, in some cases, being situated as eco-ghettos for specific, exclusive social classes. For design criteria to be sharable, they should be widely applied and adapted to the local scale according to the situation, and within the existing city to rebalance situations of social inequality and improve lifestyles and the quality of life even and especially in the most fragile quarters, working towards social sustainability. As echoed many times in the text through the cases presented, as well as in the Preface by Patrizia Gabellini, it is perhaps the most important innovation and the basic principle for a healthy city.

With reference to the neighbourhood scale, what could the large categories of reference and objectives be to compose a grid of actions/options that respond to the health/urban-planning binomial, and what might constitute a useful reference in the design phase?

Some references in England show checklists organized around themes of healthy living, active movement, a healthy environment, and “lively” neighbourhoods. Community, housing, environment, and integrated transport with urban planning policies already provide a framework of reference within which to work and trace paths in line with the determinants of health. This is a less deterministic approach than the HIA, which can help designers and decision-makers understand the implications for health, local plans, and interventions for transformation. For the rest, the UK National Planning Policy Framework (March 2012) represents a collaborative approach between health and planning according to which local authorities accountable to city government should consider questions related to public health and collaborate with health organizations to understand the state of health and the needs of the local population in order to improve health and well-being. In this sense, the framework promotes a checklist to support those responsible for development proposals or planning, professionals in public and environmental health, forums of community groups, and local associations in order to contribute to involving the community and improving the proposed solutions. The checklist aims to combine the requirements and fundamental norms that influence health and well-being, providing support for decision-makers.

London’s plan (July 2011) provides a meaningful framework for integrating health and territorial planning; it aims to improve health and address health inequalities. The checklist refers to the policies and standards of London’s plan and the standards of quality and design, which are also inserted in complementary reports such as the “Code for Sustainable Homes”, “Lifetime Homes and Lifetime Neighbourhoods”, “Building for Life”, and “Secured by Design” (2012). The checklist, which is divided into four themes, focuses on problems of health and well-being in relation to local strategies and strategies for health and well-being, such as those related to obesity and diseases linked to physical inactivity and inadequate food, air and noise pollution, road safety, social isolation, etc. (NHS 2014).

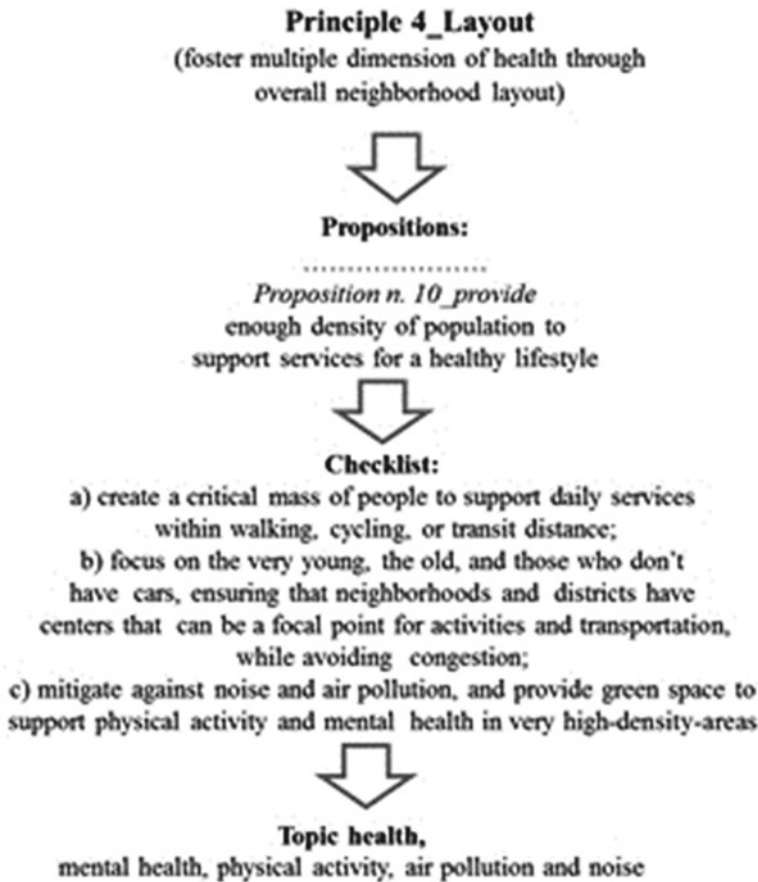
- (1) On the other hand, Ann Forsyth, Emily Salomon, and Laura Smead, in their recent book *Creating Healthy Neighborhoods* (2017), provide eight principles around which to reason for integrated health and city planning:
- (2) Importance: assess how health matters in this place;
- (3) Balance: make healthier places by balancing physical changes with other interventions to appeal to different kinds of people;
- (4) Vulnerability: plan and design for those with the most health vulnerabilities and fewest resources for making healthy choices;
- (5) Layout: foster multiple dimensions of health through overall neighbourhood layout;
- (6) Access: provide options for getting around and increasing geographic access;
- (7) Connection: create opportunities for people to interact with each other in positive ways;
- (8) Protection: reduce harmful exposures at a neighbourhood level through a combination of wider policies and regulations along with local actions;
- (9) Implementation: coordinate diverse actions over time.

While based on an experience in the United States, this method is organized into three levels, always on the local scale: principles, proposed options, and action checklists. In Appendix B of the book, “Health Topics by Section”, the proposed options and action checklists are related to the following health topics: air quality, climate-/heat-related illness, disasters, housing, mental health, noise, toxins, water quality, access to community resources, social capital, mobility/universal design, access to healthy food, physical activity, and safety. Table 10.1 illustrates the above-mentioned method, with reference to the “Principle 4 Layout”.

This is naturally only an example with respect to the organization of the general principle, proposal, checklist, and health topic (in this case mental health, physical activity, air pollution and noise). Within each individual treatment, questions related to health/neighbourhoods are addressed in depth. This is the case, for example, with Principle 3—Vulnerability, where vulnerable populations and their health risk from negative place-related health outcomes is highlighted. The health topics already mentioned are related to vulnerable populations, i.e., low-income families, children, older adults, chronically ill people, women, ethnic minorities, city dwellers, rural populations, heavy labour workers, employees, and socially isolated people.

The same is true for Principle 6—Connection, where the positive and negative effects of social capital on health and wellness are highlighted. In the case of higher levels of social support, close relationships, and interpersonal trust, health and wellness impacts relate to better self-rated health (physically), better mental health, reduced mental disorders, reduced stress, and increased life satisfaction and happiness. Regarding the lack of social support, social isolation, low social capital, and loneliness, the health and wellness impacts are worse cardiac and all-cause mortality among patients diagnosed with coronary heart disease, increased risk of depression symptoms in general, related negatively to self-reported health, psychological and physiological stress. The authors likewise carefully describe health and wellness factors where social capital may have mixed or no effects. Therefore, for all the

Table 10.1 Organization of principle 4



principles listed, there is a close correlation between health and the physical space used for living and interaction, i.e., the neighbourhood.

In the search for a renewed dimension in urban design open to the interaction with and contribution by local communities, other experiences suggest using guiding documents and principles that design proposals can refer to without the pretext of becoming binding rules, but precisely to interact with citizens and local operators.

In this respect, beyond the experiences in the United States and Canada referred to above, it is worth mentioning Scotland for Europe, which has developed the documents “Creating Places” (containing policies and directions for architecture and design), “Designing Street”⁵ (containing principles and directions to design roadways, refurbish and maintain existing streets), and “Circulars” (regarding legislative and procedural devices). These specific documents are mentioned because they rep-

⁵See: <http://www.scotland.gov.uk/Publications/2010/03/22120652/0>.

resent a point of reference and connection between policies and actions/interventions, they initiate reflection, invite the actors involved into discussion, and, even going into the scale of their content, never assume the role of specialized technological and/or operational manuals for design.

The neighbourhood dimension, recourse to checklists that combine the fundamental requirements and standards that influence health and well-being with reference to plans and projects, reference to directions and guidelines that could be of assistance in formulating design proposals—in that they facilitate discussion among the different sectors of public administration, designers, local communities, and stakeholders—together can constitute a *modus operandi* for experimentation and refinement to construct cities oriented at the health and well-being of their inhabitants.

In proposing this path, new meanings are potentially acquired by two of the most debated aspects in contemporary urban planning: densification and the temporary nature of city uses. These directly and indirectly appear as basic requirements in almost all the experiences dealt with and in the theoretical references considered. In particular, the first appears as a sort of prerequisite for some recommended actions in terms of health, such as walking, socializing, sharing spaces, etc. The second appears as an opportunity to approximate the choice for quality design solutions over time in order to contribute to creating healthier and more equitable places and lifestyles.

In the existing city, the design application of the former leads to condoning demolition, a category of intervention that is used to open quality connective spaces between existing and new areas. These respond to requirements for connection, reduced auto use, biking and walking, quality public space, and multi-functional green spaces of every size to answer the demand for urban connectivity through green infrastructures (as well as climate change): actions that induce the change and better styles of life. In sum, densification seems to contribute to the realization of basic infrastructure of the healthy city as a prerequisite for recommended actions in terms of health, such as walking, socializing, sharing spaces, etc.

The second, the temporary nature of uses, directly introduces flexibility of use in the urban project in a double manner: “in expectation of” and “in use of”. In the first case, the adoption of the design formula of the transition areas allows, within a limited time range, for spaces configured at low cost but with a high environmental return (in the case of a garden, park, etc.) usable by the inhabitants of the area undergoing transformation and the city residents. It serves as a sort of temporary incubator for quality, that is, an element for private operators to keep in mind as if it were a common green value in the moving real estate. In the second case, the squares in Rotterdam and Copenhagen are an emblematic postcard for the multi-faceted use of these spaces: from areas for play to squares for rain, from small arenas for shows and demonstrations to temporary ponds, from places for relaxing to places of transition and modification of the pertinent urban landscape. These spaces become modified and in turn modify the perception of their surroundings, becoming in a short time new places for social aggregation, landmarks in the temporary, changeable appearance, and cardinal points in renewed public space, as well as distinctive places for the communities that are attracted there.

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