UPLanD
Journal of Urban Planning, Landscape & Environmental Design

Research & experimentation
Ricerca e sperimentazione

Outside the compact city. Making borders disappear

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Highlights

- Demand for alternative to XXth century urban growth model will be crucial on city borders
- Periurban areas and urban fringe are an overall continuous built/un-built territory
- Outside the compact city, sprawl settlements face urban abandonment and decay
- Big opportunities still lie in the abundance of neglected spaces in periurban areas
- Open-spaces within borders can be the first testing ground for regeneration processes

Abstract

The paper explores the challenges of demographic changes and economic growth, with reference to post-war expansions, in-between urban and rural territories. Examining EU definitions and past programmes, it analysis the concepts of periurban areas and urban fringe within two major EU funded project: Horizon 2020 "REPAiR" and URBACT III "Sub> urban. Reinventing the fringe". These projects, going beyond past definitions, consider areas outside the compact city as an overall continuous built/un-built territory, an amorphous area between the high-density inner city and the low-density suburbs. These border areas of a city in transition, signed by urban abandonment and decay, have a strong potential for conversion and density; not in the sense of expansion related to land consumption, but working on a density of open-spaces, e.g. eco-services for new liveable habitats and sustainable way of living. The territorial regeneration process becomes progressive, adaptive and flexible, to be defined from both side of the border, through collaborative and cooperative processes, learning from the compact city.
The paper uses three samples from the EU funded project -the cities of Casoria (Italy), Antwerp (Belgium) and Oslo (Norway)- which worked on their fringe, based on principles of an alternative paradigm of growth, which starts from the conversion of physical heritage (built and un-built), through densification and diversification of uses, to re-interpret the meaning and identity of long neglected areas.

Article history

Received: August 29, 2019
Reviewed: December 16, 2019
Accepted: February 05, 2020
On line: June 01, 2020

Keywords

Compact city
Borders
Periurban
Fringe
Open spaces

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1. Cities in transition

"Transitional is preferred [...] over temporary, as it suggests that small projects contribute to a larger purpose of rebuilding the city rather than being a momentary placeholder." (Bennet & Moore, 2015).

The paper explores the challenges of demographic changes and economic growth of cities, especially regarding low-density, post-war urban areas, between the inner core and rural territory. These urbanized zones require maintenance and need alteration to meet future demands, in terms of social and environmental sustainability. These settlements are often characterised by resources (such as soil, water, energy, land) consumption, social decay and functional abandonment. Nevertheless, they still offer opportunities to infill a new density within metropolitan areas, building on their intrinsic porosity to increase accessibility to services and infrastructures (Secchi 2011; Attademo & Formato, 2018).

As urban growth also, urban decline represents a great challenge for the contemporary. Developing countries struggle continuously with how to counteract to exponential demographic changes, while in Europe policy makers deal with urban decay, under-utilization of settlements, land consumption, especially in outer areas of cities. In particular, North-West Europe is going through a time of abandonment and shrinkage in some regions and uncontrolled sprawl and growth in others (EU, 2011). With the end of the Second World War, the European city had to cope with the spatial changes caused by demographic boom and economic growth. Almost all cities have dramatically expanded, in a general inability to simultaneously develop urban infrastructures and public services (Forman, 2008). This has resulted in a landscapes of post-war neighbourhoods, located in marginal areas near the city centres and lacking in liveable and healthy environments. Traffic and congestion, mono-functional big estates, uncontrolled sprawl, became the urban form of XXth century densification (Van Tuijl & Verhaert, 2018).

Nowadays, there is the need to re-think the way cities use their resources to push their economies, developing new estates, in territories lacking any meaning and identifiable forms, beyond the opposition between urban population expansion or retraction.

The contemporary city is in transition and so is its role towards a society in continuous evolution. Metropolitan areas are currently crossed by environmental, economic and social issues, especially in the most fragile interfaces and in the most endangered habitats (Secchi, 2011). Spatial fragmentation and social vulnerability, related to climate change and global warming, intersect in systemic challenges, aggravated by the global economic crisis, within the new routes traced by migratory flows and unequal access to the opportunities of our globalized world.

Parallel to the ecological and social issues, we are witnessing a shift towards an economy model based on services, properly designed, able to interact with the extended social media networks and with the potential of new stakeholders: a co-operation between user real endings, working in a common environment with common goals and a mix of skills (Cerreta & Panaro, 2017).

Therefore, cities are facing: 1) a circular transition, fighting land consumption, managing non-reproducible resources, contrasting extreme disruptive events and climate change, as issues that cannot be negotiated, but must be fundamental in orienting policies; 2) a digital transition, within the spread of new technologies and media radically changing individual and community behaviour, unpredictably influencing the perception and construction of social habitats; 3) a democratic transition, recovering all the instances of social inclusion and empowerment of stakeholders, as bearers of innovation in processes and services, and the trigger for new democratic conditions of management, accessibility and use.

The paper illustrates a scientific description of peri-urban areas (Piorr et al., 2011) and urban fringe (Gallent et al., 2006), where these challenges will be played on the edge of existing agglomerations, in the search for alternatives to either mere land consumption -through urban sprawl, and inner cities saturation -through overlapping and overuse of congested spaces. If the Jacobsian "compact city or city of short distances" is an urban planning and urban design concept often referred to inner cities, it is absolutely still appropriate to define a sustainable space which is outside of the compact city, but nevertheless can be based on efficient public transports; a space which encourages walking and cycling through its urban layout, manages an efficient use of resources (energy, water, land), promotes density in a diversity of meanings: through green-belts, public spaces, mixed land uses in an overall more compact urban form.

This requires a dialogue in the same spatial units

between densely urbanised areas and open spaces, shaping urban forms on the interaction between physical creation and social behaviour: what Richard Sennet called "agency", as a colloid of these two different activities (Sennet, 2013).

2. A CRITICAL REVIEW OF PERI-URBAN AND FRINGE CLASSIFICATION WITHIN RECENT EU PROGRAMS

The old concentric model of the American sociologist Burgess (1925) refers to a dynamic growth that proceeds through the gradual juxtaposition of external belts, starting from the XIX century, through the expansion between the World Wars and up to recent sprawl. In a traditional model, the concentric urban region has a central nucleus, surrounded by belts (Forman, 2008): a mosaic of undeveloped territories, intersected by infrastructures (the main highways, railways, networks of public services, etc.), and of fragmented built environment. Open spaces may contain diversified uses and functions, not necessarily rural: sports playgrounds, leisure facilities, public parks, etc.
Suburbs are present both in the central nucleus and in the belt, mainly coinciding with residential areas, with a low population density, strongly commuting with inner urban centres (Forsyth, 2012).
The definition of these smaller inhabited centres relates to the presence of big nodes, i.e. cities coinciding with a relatively large or important entity, as in Forman studies, centralizing functions and flows. According with the OECD and the European Commission definition of urban area on the basis of density and relations (EC, 2012): in a morphological perspective, the city is defined as the compact built-up area, the urban continuum perceptible in an aerial view; in a functional perspective, the city is defined as an urban settlement which corresponds to a concentration of commuting flows and services, between a central urban nucleus and several urban centres, which together form a socio-spatial system integrated by functional interrelations.
In this perspective, there is no more a clear distinction (as in the traditional models) between inner core, containing all the functions, and marginal areas on the borders, geographically peripheral and dependent from the core.
Especially for the contemporary conurbation, borders disappear and urban regions can be studied as continuous models, whose internal boundaries are beyond administrative boundaries. The scale of relations is so interconnected as to make impossible to distinguish inner city, its limits, its outskirts. Soja calls this "post-metropolis" (Soja 2000), bringing urbanization on a regional scale, and thinking of density as no longer a prerogative of inner cores (Forman, 2014).
The ESPON "TOWN" project (2012-2014) used the morphological perspective to study the role of smaller inhabited centres within the urban regions of "High Density Clusters" (HDC), identifying a territorial, unitary, amorphous shape, passing through inner cores and outside centres, that have meaning for the daily life of the inhabitants (ESPON, 2014). The exchanges and relationships that take place between these different parts of the urban region identify complex and dynamic models, in which the urban phenomenon is never univocally dense or not dense. This opens, in particular, to a reflection on this in-between, continuous spatial flow, of functions and settlements, namely the "peri-urban area" of the French tradition (Steinber, 2001; Piorr et al., 2011), and on the intermediate belts of inhabited inner cores, the "urban fringe" of the Anglophone tradition (Gallent et al., 2006), as buffer zones between the compact city and the urban region.
The Horizon 2020 REPAiR project (2016-on-going) defined "peri-urban areas" as different from both urban compact cities and rural villages (Fig.1), referring to the literature of urban sprawl and in-between territories (Soja, 2000; Forman, 1995-2008; Indovina, 1990; Wandl et al., 2014). The project builds on the definition of the 6th Framework Programme PLUREL (2007-2011), working on peri-urban land use and sustainability assessment tools for urban-rural linkages (Piorr et al., 2011). Peri-urbanisations form the whole urban-rural region, together with the urban and the rural areas. On the other hand, the term "urban fringe", well defined in the studies of Gallent, which describes the English urban-rural transition areas and identifies their planning challenges (Gallent et al., 2006), refers to a spatial model, intrinsically connected with the expansion of European cities. The URBACT III "Sub>Urban Reinventing the fringe" project (2015-2018) defined it as the in-between territories among high-density clusters and low-density zones, where development pressure has often been intense, but could now be facing severe changes, even a phase of

stagnation, due to economic crisis and settlements decline (Van Tuijl, 2016).
More specifically, it has been defined as a sum of territories: a) included in the Morphological Urban Area (EC, 2012), as in the morphological perspective; b) already connected with public transport and services, or will be in the future (Van Tuijl, Verhaert, 2018), as in the functional perspective. The project builds on the definition of Interreg programme Sustainable Urban Fringes (SURF, 2009-2013), developing policy guidelines for the sustainable development of urban fringes.
While PLUREL and SURF projects defined peri-urban areas and the urban fringe as the landscapes linking urban and rural environment, REPAiR and Sub>Urban go beyond these definitions. These two projects consider them as a territory of transition between inner cores and increasing phenomena of recent urbanization.
Peri-urban areas and the urban fringe have in common the shape of a transitional, amorphous belt, infiltrating inner cores and making its limits disappear continuously. While the first is characterised by strong dynamic, urban phenomena, the latter is more related to contraction and urban shrinkage (Attademo & Formato, 2018). In both cases, compact cities borders are no more conceived as lines, but as a space (Lotus, 2019; Zanini, 2000), with mixed, sporadic functions between dense and less dense areas of cities.
In this hybrid model, these border territories can penetrate the compact tissue of the inner city (Gallant et al., 2004): along a river, in the intersection between infrastructural bundles, in the complex spaces of the port hyper-specialization, etc. Therefore, these territories are crucial to overcome the loss of a social and environmentally sustainable identity of the 20th century city (Secchi, 2005; Secchi, 2013). As in Sennet, the process of urban growth should be structured as the continuous struggle between equilibrium and disequilibrium of parts, where openness and diversity are the key to provide sustainable resources for a change.

3. Discussion

3.1 Open spaces as a testing ground

The functional connection with the inner core of the urban region calls for a hybrid and reciprocal relationship with peri-urban areas and urban fringes, in a "new pact" with central urban nuclei, integrating the dense areas and the dispersed ones, promoting functional connectivity and enhancing accessibility to services (Attademo & Formato, 2018).
In the post-metropolis model, the residential fabric expansion compressed all the free spaces close to the administrative boundaries, resulting in a risky interruption of natural networks, landscape patterns, environmental features that link cities and non-urbanized territory (Donadieu, 1998). Nowadays, the accessibility is managed only through infrastructural gates (railway lines, motorways and highways, power lines, etc.), with the consequent increase in traffic flows in unlivable, vulnerable habitats.
The scale of the regeneration project in border territories coincides with the intermediate scale of urban design, reversing the usual mechanism to provide for services and quality for suburban areas at the metropolitan level, fighting for a decent level of habitability and urban liveability (Attademo & Avitabile, 2019).
As in Landscape Urbanism theories (Waldheim, 2006), this innovative focus on the hybrid dimension of border territories, calls for a new concept of public open space as a trigger for a progressive urban regeneration process, which can build trust through prefigurative projects (Desvigne, 2012).
The interface of borders becomes a territory with a fragile metabolism of resources flows, harassed by material and territorial waste, in new taxonomies of spatial abandonment and decay (Fig. 2). The Horizon 2020 REPAiR project (2016-ongoing) specified Berger abandonment categories (drosscapes in Berger 2006; REPAiR 2018), including the operational landscapes of waste treatment and disposal (Berruti, Palestino, 2019). These territories, namely wastescapes (Amenta & Attademo, 2016), have been interpreted both as a crossing point of anthropic and environmental vulnerabilities, and as a starting point for territorial regeneration strategies (Formato, Amenta & Attademo, 2017). The research defined sets of place-specific solutions to quantitatively reduce waste flows, working on the short supply chain, through two main morphological models of open spaces (new soils and green infrastructures), which support the construction of systemic "eco-services". These services become the spinal column of a new shape of border territories, densifying uses and functions, beyond a paradigm of mere density in the built environment.

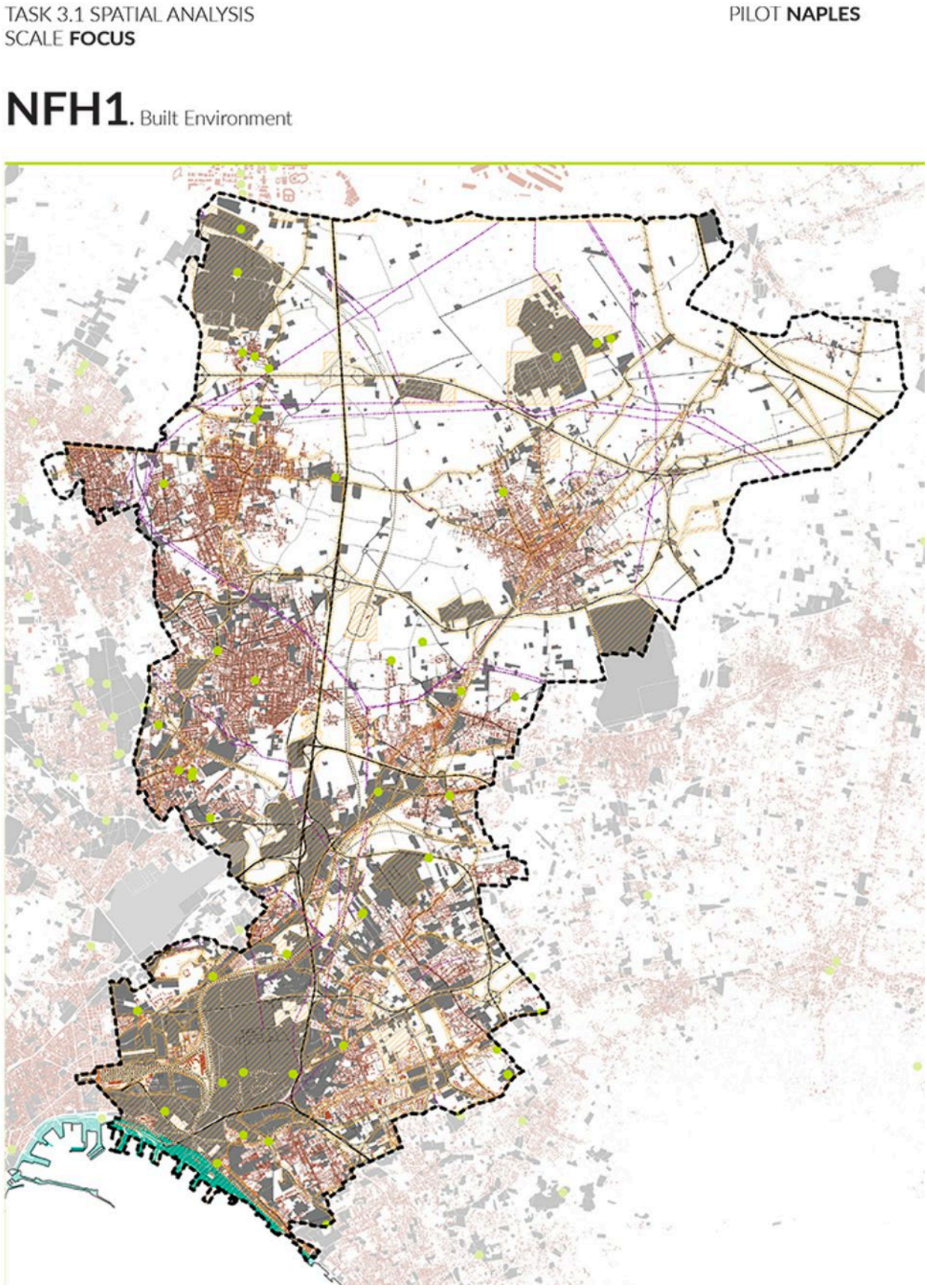

Figure 1: Map of urbanized areas and peri-urban areas. Sample within the Metropolitan Area of Naples. *Source: REPAiR Project (H2020 – GA 688920).*

This density of eco-services produces new liveable habitats and sustainable way of living. The territorial regeneration process becomes progressive, adaptive and flexible, to be defined over time, through collaborative and cooperative processes, on a local basis. It works on places born as public services or infrastructure, but in a state of abandonment. These disused places, are waiting to re-enter the urban metabolism (Pincetl et al., 2012) and can be re-interpreted as new provisions for common services, open to unpredictable uses and practices in evolution (Fig. 3). This is perfectly in line with the necessity to overcome the limits of the implementation of public sector programs in a time of economic crisis, and in coherence with the role of the public actor as enabler of welfare, activator of integrated processes with public, private, public-private resources, etc. (Amenta et al., 2019).

The URBACT III "Sub>Urban Reinventing the fringe" project offered a testing ground for this perspective: working on two levels, strategic programmes and pilot actions, the cities of the network replied to the challenge of a new kind of urban growth within the peri-urban areas and the urban fringes, without slipping into expansive paradigm of land consumption. The recovery of open, abandoned and under-utilized spaces, has been used to "densify" both historicized pre-existences and new functions facilities for liveable neighbourhoods and communities. Furthermore, temporary actions and co-management with associations repositioned the topic of equipment and of the empowerment of communities on the political agenda (Attademo & Formato, 2018; Attademo & Avitabile, 2019).

The cultural capital of communities, their way of living together as a set of behaviours, practices, uses, becomes the prerequisite for the construction of urban liveability and quality. Communities democratically influence the identity of the border territories in which they live, as well as their improvement, taking care of spaces as a common responsibility. The final result in the regeneration of open spaces on the borders, coincides with a new identity for places and communities, through a process of re-appropriation of the right to use the space.

In this sense, the peri-urban areas and the urban fringes can be interpreted themselves as a testing ground: a laboratory where policies, design tools and decision-making process can be experimented, which may prove suitable for other contexts too (Van Tujil & Verhaert, 2018). This goes back to the concept of the "new pact" between border territories and inner cores, continuously exchanging potentials, in complex, multi-functional features: natural networks, infiltrating historic compact city and connecting them with agricultural landscapes, outside from the core; resources treatment plants as intersection point between outside and inside waste inputs and outputs, taking from the inner core and giving to the wider urban region (Amenta et al., 2019).

These experimentations on public open spaces construct a long-term legacy for the urban region, through the coexistence of strategies and a series of tactical actions and temporary uses, which both build trust in the possibilities of change and provide an immediate and visible testimony, in multi-layered prefiguration projects.

3.2 Samples from the borders

In the following, three samples are proposed among the cities of URBACT III "Sub>Urban Reinventing the fringe" project. The selection is aimed at highlighting the elements of innovation within different realities, which yet face similarly the questions posed by the challenges of the contemporary world

Antwerp, Belgium

Antwerp, lead Partner of the URBACT network, proposed the other partners to work on the recovery of the fringe on the basis of Studio Secchi and Viganò Strategical Structural Plan (2003), implemented through the realization of the urban projects of the Spoor Nord Park, of the Nieuw Zuid masterplan, and with the Over de Ring (OdR) project for the Zuidoost area (Secchi & Viganò, 2009).

The leading city is dealing with the issue of how to control the foreseen demographic growth of the next decades. Through the URBACT Local Action Plan, the city strategically interpreted the topic of densification as a tool for making the most of post-war urban belts. These border territories are a system of open spaces and built environments, with the co-existence of single houses and big residential zones, large parks and productive settlements.

The "room" for growth is identified in the solid framework of public spaces, in different categories of open spaces. Key objectives were: a) the completion of sustainable urban mobility – public transport and cycle-pedestrian networks – to

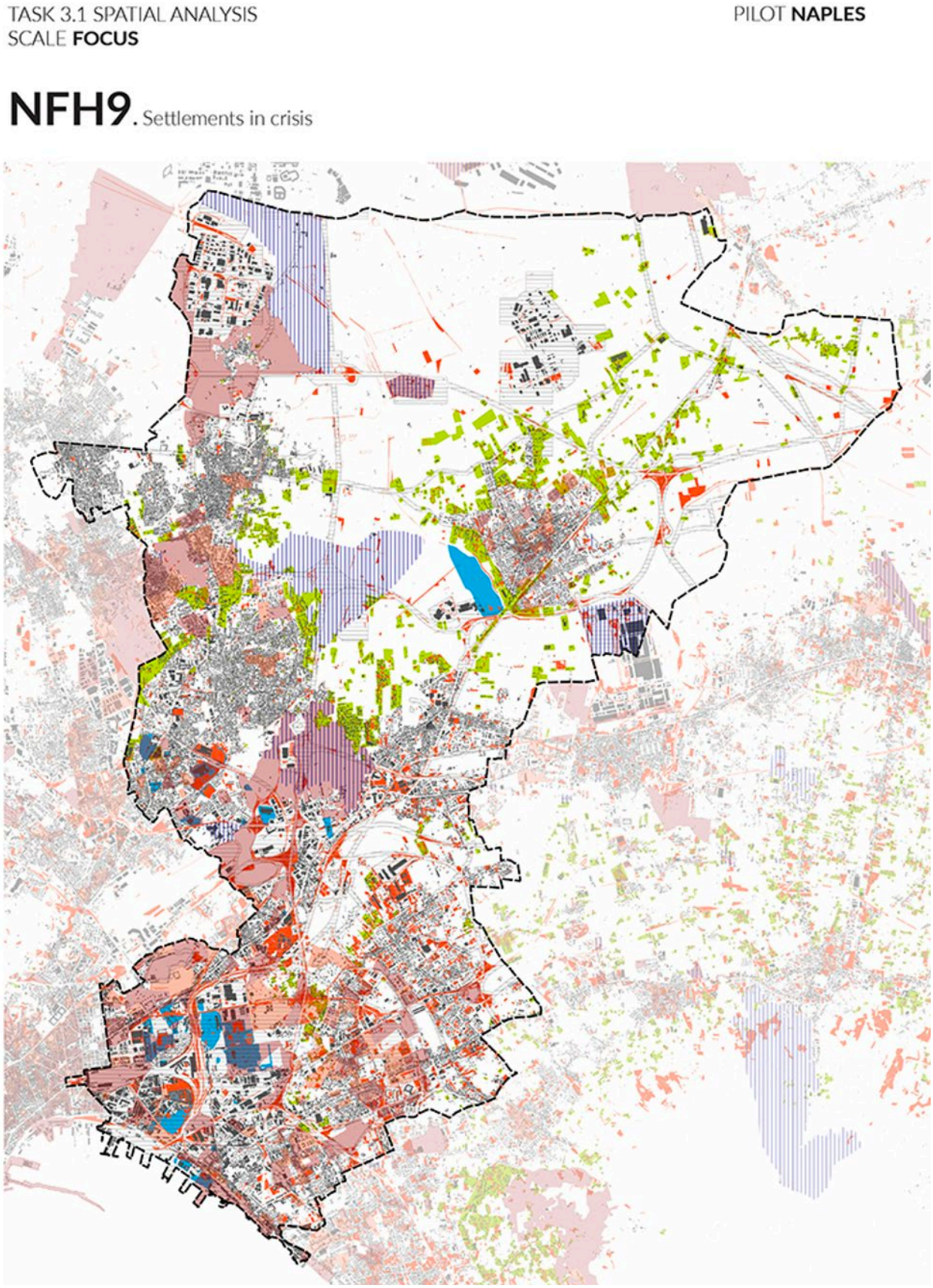

Figure 2: Map of settlements in crisis. Sample within the Metropolitan Area of Naples. *Source: REPAiR Project (H2020 – GA 688920).*

Figure 3: Wastescape within the Metropolitan Area of Naples *Source: author's photo.*

encourage connections "in" the fringe, not only towards the inner core; b) the joint between densification opportunities (held by private investors) with the need of the upgrading quality and capacity of public spaces, especially the open ones; c) the mix of public and commercial service, not only within an innovative residential program, but most of all with a collective layer of infrastructures and services (neighbourhood parking, bike sharing systems, etc.). Regeneration started through intervention on pilot sites: in Lageweg area, in particular, with the test of public-private collaboration and co-design (Belmans, 2018, in Attademo & Formato, 2018), through temporary uses, building hype and connections in open spaces between unpredictable stakeholders, and then negotiating transformations capable of having positive refraction on the regeneration of public services and neighbouring areas (Fig. 4).

Casoria, Italy

The Municipality of Casoria was the example of a medium size inhabited centre in a bigger urban region (the Metropolitan Area of Naples) facing economic and demographic decline. After a severe de-industrialization process, that lasted almost thirty years, the city is left with a transitional belt, as a parasite of the historic compact city, with a great amount of open, abandoned and under-utilized spaces. These are somehow mixed with historicized pre-existences and new sectorial functions, like big infrastructures, shopping malls, tertiary settlements, disconnected residential estates, in a general lack of urban quality and provision of public facilities.

In 2013, the Planning Department of the Municipality started the drafting of a new Municipal Urban Plan, promoting regeneration of the built environment, but above all enhancing the accessibility, the use and functioning of a spinal dorsal of existing, under-utilized open spaces. This densification of uses in the open spaces started with a pilot within URBACT Local Action Plan: a project of landscape prefiguration, through the recovery of a former military area into a public park (Fig. 5). Co-creation laboratories, between the institution and the community, elaborated projects for: a) the actual construction of the park; b) a green infrastructure, infilling the compact city; c) the social, economic and physical regeneration of degraded

urban areas (linked to the 2016 Plan for Peripheries by national state) and for the enhancement of education (linked to the 2015 Innovative Schools Call by national state).

Oslo, Norway

Oslo, is one of the fastest-growing cities in Europe. Still, it has limited expansion opportunities, both due to its topography and the protected forests around the city. Within the URBACT project, the Municipality proposed Hovinbyen, a post-war urban belt, as the expanding borders to accommodate future growth.

The presence of big infrastructures and the relatively distance from the inner core (more mental, then physical), shaped this area as a low-density, car-dependent industrial and commercial settlement, punctuated with residential sprawl and scattered series of open spaces. The challenge was to make space for 100,000 new inhabitants, avoiding massive housing densification, separated by large-scale infrastructure with the remaining industrial and commercial zones, as in the current fringe.

In specific built and open spaces within pilot areas (Haraldrud, Vollebekk and Kjelsrud cases),

Figure 4: Public use, mix of services and sustainable urban mobility in Antwerp. *Source: Dileep Kaluaratchie / CC BY-SA from Wikimedia Commons.*

URBACT Local Action Plan worked on the enhancement of identity of places, latent in the surrounding communities. In Haraldrud, a main street has been interpreted as a meeting place for an entire district, including the reuse of an old cable and wire factory, with an iconic tower, the only

Figure 5: Co-design of a public park in Casoria. *Source: URBACT III Sub>urban Reinventing the fringe.*

highly visible element in the area (Fig. 6). In Vollebekk, through the project "Vollebekk factories", the vacant premises have been rented out for free as workspaces and laboratories for social entrepreneurs. After the general regeneration of the area, with the demolition of existing buildings, some of these could become permanent facilities for urban liveability. In Kjelsrud, temporary events have been planned in a green farm, the only open space in a heavily industrial area, and a place that the community has revaluated.

Through the collaboration between different actors, both in the public and private sector, the Municipality envisioned temporary projects and long-term actions, creating awareness of potential areas for change, starting from collective layers of open spaces like main streets, abandoned buildings, forgotten wastescapes.

4. Analysis of results and conclusions

Focusing on the challenges of our global world, means now more than ever to face the issue of environmental and human sustainability. In the urban systems, where most of the battles are fought, it is becoming increasingly crucial the demand for future alternative to XXth century growth paradigms, able to counteract to mere land consumption and to densify uses and meanings. The challenge posed to the inner cores of cities is a big one, but even more relevant is the role that borders of the old compact cities can play.

In this paper, by borders we meant boundaries that are blurring, open and accessible to new networks of relationships between inner cities and outer areas, in order to reconstruct a good bal-

Figure 6: Public facilities and multiple uses in Kabelgata street in Oslo. *Source: Kuben yrkesarena / CC BY-SA from Wikimedia Commons.*

ance in the location of public services, to increase connectivity and reinforce the density of uses and meanings within settlements. This concept has been investigated in reference to EU literature definition of peri-urban areas and urban fringe, as outer parts, outside the compact city. The paper proposed two approaches, analysed in two major EU funded projects: Horizon 2020 "REPAiR" and URBACT III "Sub>urban. Reinventing the fringe". These projects, going beyond past definitions, consider these in-between areas as an overall continuous built/un-built territory, an amorphous area between the high-density inner core and the almost rural suburbs. This has been defined as a transitional part of the city, stagnated by urban abandonment and decay, but with strong potential for the abundance of neglected built and, above all, un-built spaces (REPAiR wastescapes).
The paper identifies this density of open-spaces, as a preconditional testing ground for transformation of borders into networks of regenerated areas, interpreted as eco-services for new liveable habitats and sustainable ways of living. The physical, social and environmental regeneration is perceived as progressive, adaptive and flexible, to be defined from both side of the border, using the best of both cities (Van Tuijl, Verhaert, 2018).
The lesson learned from the three samples within the EU funded project cities is what transformations of what spaces should happen first, to propagate the consequences of this initial move. Furthermore, there is a transformation of the old paradigm of planning, concretized in strategic programmes, temporary uses and new learn-by-doing processes, both for the institutions and for private stakeholders, supporting a co-creation perspective. This becomes crucial to strengthen common interest for the care of commons, in the belief that the challenge for a sustainable densification of borders will concern everyone inside and outside the city.

Acknowledgements

The author would like to thank the Horizon 2020 "REPAiR" and URBACT III "Sub>urban. Reinventing the fringe" Teams, and especially the Research Team of the Department of Architecture, "Federico II" University of Naples. This research has been carried out also within the framework of an Agreement with the Municipality of Casoria, titled "Didactic and scientific collaboration Agreement, concerning the collaboration for the carrying out of didactic, study, research and experimentation activities aimed at formulating hypotheses for urban redevelopment for strategic areas" (2016).

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