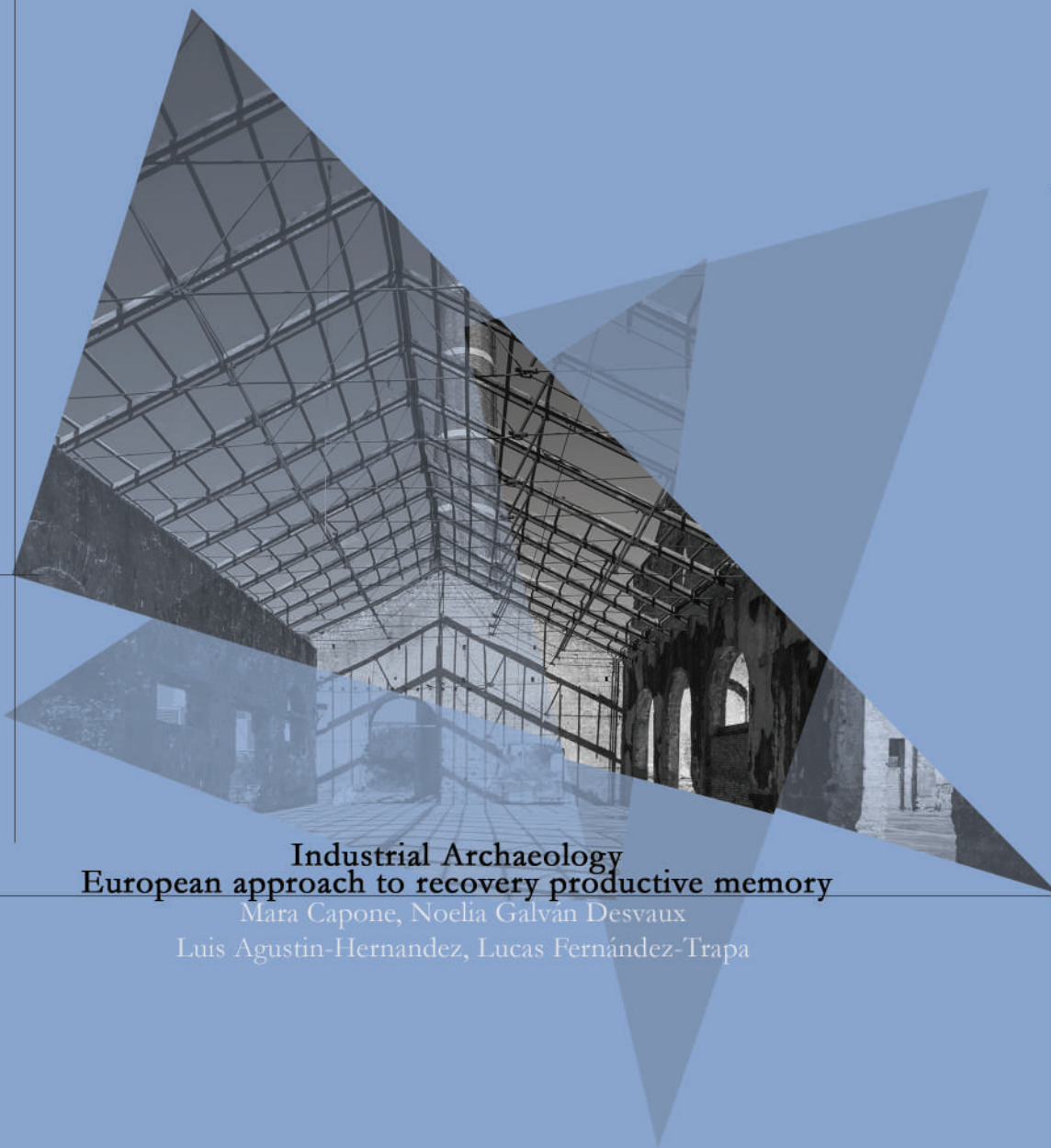


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Industrial Archaeology
European approach to recovery productive memory

Mara Capone, Noelia Galván Desvaux

Luis Agustín-Hernández, Lucas Fernández-Trapa

01 . Industrial Archaeology. European approach to recovery productive memory

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BLENDDED INTENSIVE PROGRAMME

Industrial Archaeology. European approach to recovery productive memory

University of Naples Federico II

Coordinator

Mara Capone

Anna Attademo
Gilda Berruti
Massimiliano Campi
Alessandro Castagnaro
Valeria Cera
Maria Cerreta
Antonella di Luggo
Bruna Di Palma
Orfina Fatigato
Mario Ferrara
Gianluigi Freda
Pasquale Miano
Daniela Palomba
Adele Picone
Marina Rigillo
Fulvio Rino
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Simona Scandurra

Tutors

Anna Teresa Alfieri
Giovanni Angrisani
Gianluca Barile
Francesco Casalbordino
Angela Cicala
Victoria Cotella
Marika Falcone
Mario Galterisi
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Urban Mapping

Mapping cities life cycle.

A methodological approach to mapping former industrial area

Maria Simioli, Anna Attademo

Introduction

The current debate on Urban Metabolism (UM) and Circular Economy (CE) has been criticized for being mainly focused on technological and economic issues, forgetting the further impacts on spatial, social and systemic aspects (Agyeman, 2005; Korhonen et al., 2018).

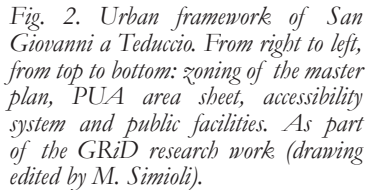
These approaches and theories have arrived at the spatial field coming from much technological fields, in advanced economic model aimed at reducing the exploitation of raw materials and gas emissions within the production processes, while preserving value of natural capital, closing loops through integrated supply-chains (EMF, 2015). Still, such a technocratic perspective needs to be accompanied by a comprehensive rethink on the current economy trends, which could potentially leave vulnerable territories and communities behind, enlarging the field of knowledge and action through the mapping of supply-chains spatial impacts (Rifkin, 2022; Loiseau et al. 2016).

That is why, even if so far CE and UM have been mostly applied to the analytical description of material flows (Baccini & Brunner, 2012), there are clear opportunities to include disciplines of planning and design using UM theory as the storyline keeping multiple issues together, e.g. mapping the physical, social, industrial, urban, and political conditions that influence the territorial development and its life cycles (Grulois et al., 2018; Heynen et al., 2005). Thus, these theories can create an innovative baseline knowledge for urban transformations too, leading to a new type

van Timmeren - Delft University of Technology, UNINA coordinator: M. Russo. Its main objective was the creation of eco-innovative strategies, aiming at the reduction of waste flows in peri-urban areas of six European case studies (Amenta et al., 2022).

- EcoRegen. Circular economies and periurban areas regeneration (2020-2022); Research of Federico II University of Naples, 2020-2022, coordinator: M. Russo. The research is a spin-off of H2020 REPAiR, testing the methodology within public residential enclaves of the coastline of Campania, optimizing the flow of Construction & Demolition Waste. Both projects analyze the metabolism of urban and peri-urban areas, recognizing to waste and degraded landscapes, through the neologism of «wastescape» (Amenta & Attademo, 2016; REPAiR, 2018), the role of a discarded resource to be reintroduced into a new life cycle. For this reason, they started with a cross-disciplinary collaboration, from urban planning to Bioscience Engineering, which worked on integrating spatial analysis, material flows and life cycle assessment into the design of circular processes.

An innovative methodological model of intervention for baseline knowledge and mapping based on CE and UM is therefore approached. It presents some of the findings of the research funded by the University of Naples Federico II, titled “EcoRegen. Circular economies and periurban areas regeneration”. This latter works on the design of circular processes and aims to increase the quality of life of peri-urban territories through the development of short supply chains, particularly those coming from Construction and Demolition Waste (CDW), generated by the renewal of the existing building stock, both when in a state of ruin and when in poor, non-efficient conditions. EcoRegen is supported by different disciplines (from urban planning to architecture and technological design) converging on the assumption that neglected areas (wastescapes, as for Amenta, Attademo, 2016 terminology) could become places for unexpected occasions of rebirth. Wastescapes are here intended as spaces to be reclaimed to improve the quality of life within disregarded communities, crossing spatial and social justice issues: a resource of



biological and mineral capital through which to activate circular economy models for a resource-efficient city.

A key challenge is thus to impact on the one hand on multilevel governance efficiency for urban regeneration, to support the recycle and the reuse of the territory, avoid material waste and energy consumption, also through inclusive decision-making processes; on the other hand, on local planning, through the implementation of the developed methodology into innovative planning frameworks.

Based on these premises, EcoRegen research tries to design life cycles of the peri-urban areas, focusing on the relationship between uses, resources and values that characterize each type of wastescape. This approach led to the construction of a mapping and cataloging database of all wastescape areas, in which a regenerative process could revive the overall forms of living in these territories.

Materials and Methods. The case study area

The study area is in the metropolitan area of Naples, Italy. The research selected a huge territory in the eastern area of Naples featured for the presence of several former industries, built in the first decades of the 20th century. This is a dense urban and peri-urban area, extending itself from the coast and the Port of Naples to the Vesuvius volcano slopes. Since the 1950s, urban settlements were built to accommodate huge migration processes from the outskirts of the metropolitan area of Naples, without any consideration of the pre-existing patterns of natural landscapes, shorelines and agricultural areas that have survived after the 1900s' industrialization era. A general lack in comprehensive urban planning for new urban settlements and the post-war acceleration of the construction of big residential areas, resulted in urban and ecosystemic fragmentation, lack of mixed land uses and social deprivation.

Within this context, the EcoRegen research has identified a series of "areas for transformations". These are defined according to the key elements structuring the territory that have been interpreted as catalysts for future transformations. Notably, the research highlights "hard spines" that are areas featured for being functional corridors for providing new visions for local development. Particularly, the rows of public residential settlements (ERP, in Italian acronyms) are interpreted as public spines available for recovery and recycling processes.

The case study area is located on the edge of the city, where the compact patterns of the consolidated settlement turn into the chaotic structure of the urban fringe area. Here, the categories of density and dispersion, growth, and shrinkage, merge each other (Attademo & Formato, 2018).



Fig. 3. Cataloguing of the wastescapes of Spine 1 in East Naples: former steel industry, Parco Teodosia, kindergarden (drawing edited by the urban planning group of the EcoRegen research).

The historic centres, memory of the former rural hubs, are connected by a discontinued urban pattern, where a hybrid urban-rural landscape is fragmented by abandoned industrial enclaves, underutilized settlements, low-density sprawl, greenhouses, and a variety of hybrid spaces, such as car parks, logistic platforms, shopping centers (Lucci & Russo, 2012). This area is also featured by a broad hydrographic network, historically regimented to reclaim the marshes between the eastern area of the

city and the sea. These former marshes are still characterized by the presence of the water, remaining a primary landscape element, albeit in highly urbanized contexts fragmented by degraded spaces, with high environmental vulnerability, over and over exposed to flooding, hydrogeological and seismic risks (due to the near presence of Vesuvius volcano).

As previously mentioned, after the Second World War, the urbanization process in the area corresponds with the growth of small historical nucleus located in the peri-urban areas. Such a huge urban enlargement was led by a number of urban development programs for the construction of public housing. The INA-Casa program, funded with the American Marshall Plan for Reconstruction in 1948, the so-called “Fanfani Plan” (Italian Law no. 43/1949), was one of the main drivers of such a kind of peri-urban development. The plan worked on two seven-year periods, and it was finalized from a perspective of social and economic revitalization of the country, supporting the construction sector. The goal of providing a “house for all” was a political label of social responsibility and extended welfare, so that the public institutions responsible for the construction were also identified as the moral guarantor of the collective effort in improving the living conditions for the new generations (Attademo, 2021). In particular, in the second seven-year period, the “neighborhood unit” is given a role of control and guiding principle on urban growth. Following, as in the contemporary English model of the County of London Plan by Abercrombie and Forshaw (1943), settlement principles of functional autonomy with respect to the pre-existing fabric, the attempt is to support community-building, designing public spaces and promoting public uses to integrate the residential fabrics. But despite the well-structured projects, the almost exclusive presence of low-income families and the absence of mixité with no functions other than the residential one, has determined the gradual introversion and the consequent creation of deprived and isolated microcosms.

Additional national regulations (e.g. Italian Laws no. 167/1962, no. 457/78) and planning programs (above all, the Neapolitan Plan for Peripheries of



Fig. 4. Spine N. 1 of East Naples (drawing edited by the urban planning group of the EcoRegen research).

1980, and the Extraordinary Housing Program – P.S.E.R., for providing new residential areas after the 1980's post-earthquake emergency) have accelerated building procedures. The study area has been gradually featured by the construction of single-purpose settlements, without providing adequate structures and spaces where all the neighborhood's units could be transformed into real communities.

Currently, the city of Naples is addressing the legacy of this 20th-century urban planning, promoting the role of urban design in developing care measures for spatial and social heritage, also in national and EU planning programs. In this sense, it is interesting to point out the presence of a vibrant community of third sector actors that are reclaiming wastescapes, with the purpose to build new open spaces and provide social services,

as for the case of the first Italian Energy Community (national Law no. 285/2020), providing energy to 40 families that live nearby to a no-profit organization, already providing activities for disadvantaged children.

Mapping methodology

The interest in viewing the territory through a metabolic lens and charting its evolutionary path using existing resources arises from the aim to establish an analytical, strategic, and design methodology that can guide various stakeholders involved in the territorial transformation towards “closing the loops”. This involves repurposing waste materials (such as those from complete or selective demolitions) and revitalizing unused areas as part of the environmental infrastructure (Prendeville et al., 2018). Developing this methodology, alongside a strategic masterplan and the proposal of pilot projects as prototypes, can contribute to fostering dialogue with institutions. This dialogue aims to equip local policies with the necessary tools to transform and enhance the territory effectively.

Our methodological approach is based on a series of critical questions that guide our research on applying circular economy principles to the territory. The first fundamental question is: how can we translate the concept of circular economy into concrete actions on the ground? To answer this question, we have posed two specific sub-questions:

(i) The first sub-question concerns representing the territory based on the presence of waste. To do this, we need to develop a “language” that allows us to interpret and communicate the presence of waste clearly and understandably. This will help us identify areas where circular interventions can make a difference.

(ii) The second sub-question focuses on identifying opportunity territories where intervention is most effective. Here, we focus on identifying areas that offer the best opportunities for implementing circular strategies. This requires carefully analysing the local context to pinpoint areas where interventions can significantly impact sustainability. The research is structured in three phases:

- *Exploration*: It involves defining a critical-interpretative analysis of the



Fig. 5. Cataloguing of the wastescapes of Spine 1 in East Naples: former industries and infrastructure buffer zone (drawing edited by the urban planning group of the EcoRegen research).

territory through an in-depth qualitative and quantitative investigation through a photographic campaign (Atlas) and spatial analysis in a GIS environment (Mapping). This approach allows for identifying critical areas of the territory and prioritising intervention areas for transformations, such as clusters of public residential buildings and wastescapes. Regarding wastescapes, data from the REPAiR project were utilized and refined at the municipal level using various sources such

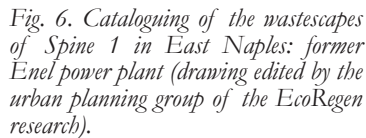
as urban plans, virtual and physical site inspections, and photographic documentation. The ERP heritage was identified through bibliographic sources, urban plans, municipal archives, and the province of Naples's ACER (Regional Company for Public Housing) database.

Subsequently, the mapping phase corresponds to acquiring data and information for each identified resource space, aimed at building a database, including analytical sheets on quantitative and descriptive-perceptive data.

For the ERP neighborhoods, based on a compositional-architectural reading and social context, information regarding users, uses (particularly ground floors and their alteration), building structure, and relationship with the context has been provided. Specifically, macro-categories have been identified to initiate data collection: Socio-spatial Dimension, Urban-landscape Dimension, Architectural Dimension, and Spatial Dimension within the built environment, to which a series of quality indicators have been associated to understand the criticalities and potentials of each public housing district.

On the other hand, the proposal for inventorying wastescapes is structured in four parts:

- a) Basic data: (name, address, municipality, cadastral data, etc.), related to the asset's location and dimensional characteristics (technical drawings, area, height, etc.);
 - b) Enabling context conditions: (REPAiR category of wastescapes; ownership of areas (public/private), accessibility of areas, transformability of areas, relation to the waste-specific geography;
 - c) Additional elements to apply Eco-Innovative Solutions: urban function by local regulation, local regulation constraints, current destination, contamination data;
 - d) Additional elements to apply Life Cycle Assessment and environmental design: Building Materials, Physical aspect of outdoors.
- Actions: a systematization of the previously analyzed and elaborated information results in a matrix to guide specific interventions at the urban scale, identifying actions and strategies aimed at implementing the



- **Transformations:** developing a master plan that determines spatial strategies based on acquired knowledge, suggesting strategic directions for the entire territorial area, and providing guidelines for urban design. Analyzing, interpreting, and planning the territory according to a

metabolic circular approach, based on the careful use of resources, self-sufficiency, and resilience of a city, allows defining a helpful map for sustainable urban planning where various metabolic elements – resources (inputs), processes (resource life cycle), waste/emissions (outputs), flows (linear and/or circular) – are evaluated at different scales to become part of planning practices (Bote Alonso et al., 2022). Circular mapping necessarily requires using a continuously updatable tool capable of accommodating the mutability of changes in contemporary cities. In this sense, using an open-access WebGIS platform allows the process to be shared, updatable, and usable (Figg. 1,2,3).

The former Corradini as a resource space

The resource spaces identified within the EcoRegen research have allowed the identification of intervention and study areas at the municipal scale, which are identified as hard spines. Seven hard spines have been identified, but the research has developed an in-depth study on the first spine of Naples East (Fig. 4), on which to experiment with circular strategies for territorial regeneration. The former Corradini industrial complex was also identified within spine 1, among the mapped wastescapes. This industrial archaeology represents a strategic element for the San Giovanni a Teduccio territory in terms of regeneration, with the potential to serve as an urban system that anchors different types of interactions between the coastline and the city, implementing a large-scale regeneration aimed at a new and sustainable use of this portion of the territory by the diverse communities that inhabit it. In 2022, the Federico II University, in collaboration with important institutions, the Campania Region, and the Municipality of Naples, applied for funding for the property under a public notice from the National Agency for Territorial Cohesion to create an internationally renowned Hub in the field of Green Innovation to host public and private initiatives in Research, Innovation, Technology Transfer, Business Creation, Specialist Training, and Scientific Outreach on digital and sustainability issues. This perspective is in line with a development vision already outlined with

the Federico II University campus, which also hosts the only European Academy of Apple, and the transformations underway and planned for the area: the demolition of public housing buildings in “Taverna del Ferro”; the construction of a cycle-pedestrian path along the coastline, the Federico II University campus, the restoration of Forte di Vigliena, etc.

The “Green Innovation District” (GrID) project, developed by the University of Naples Federico II, envisages intervention on the part of the former Corradini plant, specifically on the plot corresponding to the Pellami Fratelli De Simone Factory, formerly Dent Allcroft & Co. The former Corradini complex, subject to constraints under Law 1089/39, today the Cultural Heritage Code, by decree of February 27, 1990, consists of 54 buildings, including sheds and service buildings, all abandoned for decades, with partial collapses and advanced phenomena of subsidence and degradation.

The former Cirio-Corradini industry is located in the San Giovanni a Teduccio district (Fig. 5), which until 1925 was an autonomous municipality and today, together with the districts of Barra and Ponticelli, constitutes the sixth municipality of the Municipality of Naples. The entire eastern area of Naples had always been conceived as a large industrial hub of the city, starting from the 1939 plan coordinated by Luigi Piccinato. This evolution also affected the coastal area with industrial expansion along the coastline when, towards the end of the 18th century, in addition to the presence of important historic villas along the “Golden Mile” road parallel to the coast, the first industrial plants began to be located with the construction of the first industrial building called “Palazzo dei Granili” in Portici, designed by Ferdinando Fuga (Buccaro, 1992). The industrial character of the area was consolidated with the construction of the first Italian railway line, the Naples Portici route, which effectively facilitated the transport of goods, favouring the creation of new industries along the coast (Alisio, 1982). In the late 1970s, with the crisis of the industrial model and the phenomena of deindustrialization, and the public housing policies, which in the 1980s produced a significant increase

in public residential construction carried out with the Extraordinary Reconstruction Plan (PSER), marked the isotropic and homogeneous character that characterizes this part of the city. A decline is also marked by phenomena of atmospheric, water, and soil pollution generated by industrial activity.

From the mid-1990s, the Municipality of Naples defined a territorial redevelopment strategy based on a substantial modification of the role attributed to the eastern coastal district of Naples: 1) the settlement fabrics of the old “peripheral” historical centres are recognized, including Barra and San Giovanni; 2) the reuse of old disused industrial areas with various functions is promoted and regulated; 3) the boundary of the commercial port is moved westward, allocating the coastal strip facing the district to recreational activities and the establishment of higher-level service functions, including, precisely, the University and a Youth Citadel in place of the Vigliena power station. Consistent with the redevelopment strategy at the urban scale, in 1999, the Municipality acquired ownership of the former Corradini plant, located on the coastline, to promote its reuse as a public facility predominantly for university purposes (Formato, 2023). In 2009, the Municipal Administration, to reformulate the territorial regeneration strategy and create synergies between territorial development and significant infrastructure projects, approved a Preliminary Urban Planning Plan (Pua) for the “Cirio-Corradini” area of San Giovanni. For the San Giovanni a Teduccio area, the Naples masterplan identifies the area as zone G “production of goods and services,” and refers to the area sheet no. 14, the regulations governing the possible interventions within the PUA (implementing urban planning plan) (Fig. 6). The priority works identified by the preliminary plan that concern the former Corradini complex are: a) Pedestrian overpass of Vigliena; b) Urban archaeological park of Forte di Vigliena; c) New equipped square in front of the residential complex “Centocamerelle”; d) Restoration of the former Corradini, aimed at the formation of a complex for collective activities and artistic-cultural production.

The recovery of the plant and individual buildings is planned, integrating

the settlement with the urban context and opening the new structure towards the neighborhood, in compliance with the specific management needs of the university. To this end, the identification of access points and permeability on the edges of the area towards the hinterland is prescribed to restore the relationship between the neighborhood and the sea, interrupted by the construction of the railway. The project developed as part of the GrID proposal thus pays special attention to open spaces, integrating with the coastal bicycle path project promoted by the municipality. These areas, placed in continuity with the adjacent coastal spaces, could represent an opportunity to create new green and equipped areas - a square, a “grove,” weakly structured fields for games and sports, a space for the docking of the Metrò del Mare - increasing the degree of relationship between the city and the sea. A relationship, the latter, lost for decades, for the reconquest of which the role of the former Corradini is confirmed as crucial.

Conclusions

This contribution reflects on some insights developed within the EcoRegen research, with specific attention to the methodological approach adopted to identify novel and innovative ways of representing the territory, starting from the urban metabolism map. However, mapping is not the only descriptive method to be favored; it is necessary to use tools that can provide a perceptual description of places containing a significant design charge within them. The objective is not only cognitive but also strategic and design-oriented, working on the potential of the territory to transition from what is to what it can be.

Therefore, the main goal of this chapter becomes to point out and prove, in a specific neglected context, how the wider regeneration of urban assets needs to go hand in hand with circular economy principles, strongly considering the spatial impacts of waste flows (Rigillo et al., 2020). The research has been challenged with a model of intervention that puts together territories that can input waste (e.g. CDW from urban settlements in need of renovation, abandoned factories, etc.) and

neglected territories (wastescapes) where waste could be recycled. Within this perspective fits the experimentation conducted in the area of the former Corradini, which represents both a wastescapes and a potential flow of material, thus becoming fertile ground for testing short supply chains in the on-site reuse of CDW materials, and reused to regenerate the wastescapes, largely applying Eco-Innovative and Nature Based Solutions to design accessible, public landscapes (parks, cyclo-pedestrian networks, squares, etc.).

By envisioning new purposes for all metabolic flows, functional needs can be satisfied in a planning framework aimed at working on the shortening of supply chains, avoiding the consumption of new soil, energy, material, or the accumulation of waste (Rigillo, 2022). In the following, some examples of solutions are proposed, promoted thanks to incentives, and aimed at improving the current performance of peri-urban ecosystems:

- Urban regeneration of neglected settlements, including selective demolition on site;
- Public facilities in recovered wastescapes interpreted as collection point/market place related to bulky waste (Attademo & Berruti, 2021);
- Technological upgrade of existing productive sites, into new reuse/recycle facilities;
- Production/use of recycled aggregates for different purposes, including innovative landscape transformations such as the shaping of new parks through artificial orography;
- Use of biobased materials for new developments, etc.

The adoption of the UM principles within the wastescapes regeneration reduces the consumption of renewable resources and enhances the reuse and recycling of waste within the intervention itself. In fact, the recirculation of waste makes it possible to capitalize on the investment in the natural resource (inert extraction), already realized at the time of the settlement construction.

The recovery intervention of the wastescapes thus takes the form not only of an opportunity to restore dignity and identity in neglected areas, but also as an innovative and ambitious practice for accounting in a

“non-extractive” architecture perspective (Space Caviar, 2021) largely consistent with the objectives of circularity and sustainability.

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References

- Agyeman, J. (2005). *Sustainable communities and the challenge of environmental justice*. NYU Press.
- Alisio, G. (1982). L'industria dell'Ottocento nella periferia orientale napoletana. In *Associazione per l'archeologia industriale. Centro documentazione e ricerca per il Mezzogiorno Bollettino*, No. 2-3, pp. 5-10.
- Amenta, L., & Attademo A. (2016). Circular wastescapes. Waste as a resource for periurban landscapes planning. In *CRIOs*, No. 12, pp 79-88.
- Amenta, L., & van Timmeren, A. (2022). From Wastescapes Towards Regenerative Territories. A Structural Approach for Achieving Circularity. In L. Amenta, M. Russo & A. van Timmeren (Eds.). *Regenerative Territories Dimensions of Circularity for Healthy Metabolisms*, pp. 147-160. Springer Cham.
- Attademo, A., & Berruti, G. (2022). Planning Wastescapes Through Collaborative Processes. In L. Amenta, M. Russo & A. van Timmeren (Eds.). *Regenerative Territories Dimensions of Circularity for Healthy Metabolisms*, pp. 233-240. Springer Cham.
- Attademo, A. (2021). Politiche per la casa tra dopoguerra e anni '80. In A. Attademo, E. Bassolino, C. Orfeo & L. Veronese (Eds.). *La costruzione della periferia. Napoli, 1945-1986*, pp. 23-28. Napoli: Clean.
- Attademo, A., & Formato E. (Eds.). (2018). *Fringe Shifts. Nuove forme di pianificazione per urbanità in transizione*. Trento: LISt Lab.
- Baccini, P., & Brunner, P. (2012). *Metabolism of the Anthroposphere: Analysis, evaluation, design (2nd edition)*. MIT Press.
- Buccaro, A. (1992). L'area industriale orientale nel secolo scorso: origini dei luoghi e interventi fino all'Unità. In A. Vitale (Ed.). *Un destino industriale*, pp. 323-328. Napoli: Cuen.

- Bote Alonso, I., Sanchez-Rivero, M. V., & Montalban Pozas, B. (2022). Mapping sustainability and circular economy in cities: Methodological framework from europe to the Spanish case. In *Journal of Cleaner Production*, No. 357, pp. 131-870.
- Formato, E. (2023). La ex Corradini e il quartiere. In M. Rigillo, E. Attaianese, G. Galluccio & S. Russo Ermolli (Eds.). *Strategie Tailor-Made per il governo dei processi complessi. Approcci digitali per interventi sostenibili di trasformazione urbana*, pp. 166-171. Napoli: Clean.
- EMF - Ellen Mac Arthur Foundation (2015). *Growth within: a circular economy vision for a competitive Europe*. Report sponsored by SUN (Stiftungsfonds für Umweltökonomie und Nachhaltigkeit) in collaboration with the Ellen MacArthur Foundation and the McKinsey Center for Business and Environment.
- Grulois, G., Tosi, M. C., & Crosas, C. (2018). *Designing Territorial Metabolism Metropolitan Studio on Brussels, Barcelona, and Veneto*. Berlin: JOVIS Verlag GmbH.
- Heynen, N., Kaika M., & Swingendouw, E. (2005). *Urban Political Ecology and the Politics of Urban Metabolism*. London: Routledge.
- Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular Economy: The Concept and its Limitations. In *Ecological Economics*, No. 143, pp. 37-46.
- Loiseau, E., Junqua, G., Roux, P., & Bellon-Maurel, V. (2012). Environmental assessment of a territory: An Overview of existing tools and methods. In *Journal of Environmental Management*, Vol. 112, pp. 213-225.
- Lucci, R., & Russo, M. (2018). *Napoli verso Oriente*. Napoli: Clean.
- Mostafavi, M., & Doherty, G. (2016). *Ecological Urbanism*. Zurich: Lars Muller.
- Prendeville, S., Emma Cherimb, E., & Bocken, N. (2018). Circular Cities: Mapping Six Cities. In *Transition*. Environmental Innovation and Societal Transitions, No. 26, pp. 171–194.
- REPAiR (2018). *D3.3 Process model for the two pilot cases: Amsterdam & Naples*.
- Rigillo, M., Formato, E., & Russo, M. (2020). Short Supply Chain of Waste Flows: Designing Local Networks for Landscape Regeneration, Detritus. In *Multidisciplinary Journal for Waste Resources & Residues*, Special Issue Waste Architecture Cagliari, CISA Publisher, pp. 35-44.
- Rigillo, M. (2022). Hybridizing Artifice and Nature: Designing New Soils Through the Eco-Systemic Approach. In L. Amenta, M. Russo & A. Van Timmeren (Eds.). *Regenerative Territories Dimensions of Circularity for Healthy Metabolisms*, pp. 281-296. Springer Cham.
- Space Caviar (2021). *Non-Extractive-architecture. On Designing without Depletion*. Berlin: Sternberg Press.

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Mara Capone



University of Naples
Italy

Architect, PhD. Associate Professor of Drawing at the University of Naples Federico II. She teaches in Architecture and Design degree programs and is member of PhD Teachers College in Architecture. She is member of the scientific Committee of the journal EGA. She is involved in many Heritage funded research projects and she is responsible for international relations with institutions like UFPB (Brasil).

Studied architecture in the ETSA Madrid and TU Berlin, graduating as an Architect in 2005. Currently an assistant lecturer & researcher at the Department of Architecture University of Applied Sciences in Koblenz, he is specialized in Industrial Heritage & Design. He also runs the award-winning architectural practice *heltwerk architekten BDA*.

Lucas Fernández-Trapa



HS Koblenz
Germany

Noelia Galván Desvaux



Universidad de Valladolid
Spain

PhD in Architecture, Associate Professor in Graphic Expression at UVA, researching drawing's architectural heritage through the @archimnemosyne_uva project. Active in research groups GIRDARPA (UVA) and AIRASM (UA). Lecturer in Spain and Italy. Expertise in post-war American domestic architecture. Collaborates in the integration of design and architecture through drawing.

Architect in ETSA of Barcelona (1993), PhD (2013), Associated Professor in Architectural Graphic Expression. Head of the Department of Architecture at the Universidad de Zaragoza, guest lecturer at international universities. Reference researcher, from the GRAPHyC group, Research lines: Architectural heritage, Photogrammetry, Laser scanner, HBIM.

Luis Agustin-Hernandez



Universidad de Zaragoza
Spain

The book collects the contributions of an interdisciplinary work carried out during a BIP (Blended Intensive Program) funded by the European community. The topic is related to the abandoned industrial sites that are protected for historical interest. Starting from a comparison between the different approaches based on the study of the best practices and the different methods and tools of analysis, some premises have been defined for the representation of the site and the development of transformation hypotheses for reusing of the ex Corradini in S. Giovanni. Stimulating the cultural debate, dealing with different cultural realities, defining replicable methodological paths are the main objectives of this work.

