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Carmine Gambardella

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Italy and China, between History and Nature. A network of networks for urban regeneration and territorial rebalancing

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Abstract

The paper illustrates part of an international research activity that a group of professors and researchers from the PDTA Department of Sapienza University of Rome has been carrying out on the topic of urban and territorial regeneration, within a framework of cultural and scientific collaboration with Chinese Universities. In particular, the research path is aimed at defining a "methodology" of analysis and planning for the regeneration of contemporary cities and territories characterized by the widespread presence of cultural and natural heritage, with particular reference to the historic infrastructures (citywalls, channels, historic roads) and ecological networks as founding elements of the "historic territory" (ANCSA,1990) and of the "historic urban landscape" (Unesco,2011). In consistency with the research path, the paper starts from the analysis of Italian and Chinese historical urban contexts, combining three different disciplinary perspectives that involve structural and morphological issues with environmental ones. The contribution deepens integrated and multi-scalar regeneration strategies focused on the strengthening of the relations between public space systems, historic infrastructures and environmental networks. This network of networks requires the definition of strategic planning zones for urban and territorial planning and projects that involve, in the case studies, waterways.

Keywords: Urban regeneration, Historic Infrastructures, Ecological Networks, Italy, China.

1. Urban regeneration and experimentation. Towards a convergence between Italy and China

1.1 Regeneration and government of the contemporary city. Towards a network system of the public city

The metropolization processes involving Italian and European cities in recent years have brought about significant transformations in the territorial arrangements, and have changed the meaning of the problems related to urban planning, the environment, and landscape. The outcome of these processes, the contemporary city, traditionally understood as a place of concentration, density, and physical, social and symbolic complexity, has become a place of "non-places" [1]. It is a city marked by a territorially unlimited dimension, corresponding with high levels of pollution and energy waste, serious infrastructural shortcomings, strong heterogeneity and fragmentation of fabrics, and high land consumption rates, in addition to a structural lack of public spaces and of territorial coverage. This feeds a profound sense of insecurity, severing the bonds of identity between local communities and territories, between settlement dynamics and historical, stratified arrangements [2].

In this setting, the generalized conditions of marginality induced by the effects of globalization – and in the presence of a phase of severe and prolonged recession, increased world population, physical decay social, economic, and cultural alienation, environmental fragility, extreme climate change and seismic events, the pressure of migratory flows [3] and, now more than ever, the current, dramatic situation of health emergency – highlight the emergence of a new *urban question*.

This framework raises the need for a unitary, integrated, and interscalar strategy of public government – finding correspondence in a central institutional office playing an effective leadership role – aimed at

urban regeneration and at restoring territorial balance, in order to provide prospects of fairness, quality, and efficiency for the government of the city and of the contemporary territories [4].

It is a regeneration strategy that promotes the practice of “*faire la ville sur la ville*” and of “building on the built,” involving all the policies relating to the territory’s government, from the development policies of the settlement system and of the infrastructure system, to the policies of protecting and valorizing the environmental system and its ecological, historical, cultural, social, and economic values; from the local policies of the “territories” to national and supranational ones [5].

The feature of integrating regeneration, as a strategy of reference for articulating the 12 “thematic priorities” of the Urban Agenda for the EU aimed at developing common solutions for the regeneration of urban areas and putting best practices into play, is in fact set out in the definition adopted by the European Community (2007) “*renewal process, (...) form of recovery or of valorization (...) aimed at revitalizing problem areas – dealing with issues connected to the recovery of natural and manmade settings, to the conservation of the heritage, to social integration, to employment, and to economic activities – in urban, peri-urban, and rural settings.*” The strategy is also set within the scope of the global guidelines of the United Nations, identifying the 17 “*Sustainable Development Goals*,” whose goal no. 11 states the priority of experimenting with new arrangements in order to achieve, on a global level, “sustainable cities and communities”: safe, enduring, and inclusive settlements, starting from an integrated intervention on infrastructures and public spaces, and the home, by supporting the “*positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning*” [6].

This strategy, then, not just of urban planning referring mainly to the physical part of the city, but one of social inclusion and local economic development [7], takes on for these purposes the public city, the set of public or public-use components relating to open spaces, to green areas, to services, to mobility, and to social housing, both as a structural pattern and supporting skeleton of a new and more balanced territorial, networked arrangement, and as a framework of consistencies for the strategic choices of an overall, compensatory process of regeneration of cities and of the contemporary territories.

This process finds its focus in the development of a new *urban welfare* providing a response to the demands imposed by the new *urban question*, through the construction of a *system of networks* – tangible and intangible, interactive and integrated – that guarantee coverage and extensive presence on the territory, giving priority to protecting and valorizing shared assets upon which to re-found the quality of the urban environment, the historical and cultural identity of communities, and the very meaning of the collective use of spaces.

1.2 Regeneration and experimentation. Thematic nodes and operative references

In this framework, some thematic nodes, like the new challenges connected to climate changes and to hydrogeological defence, ecological and environmental compensation, the new urban economies, the management of shared assets for caring and maintaining the urban environment, dwelling strategies, the energy reconversion of housing stock, social inclusion, and sustainable mobility, are priority objectives of laws, plans and programmes for regeneration on the urban scale and on the territorial scale initiated in leading European cities. They also find a convergence of interests on a global level, starting from national international, and European policies [8].

These laws, plans, and programmes experiment with new operative references for the (re)construction, on all scales, of the networked system of the public city, taking on the “sign” of the invariants, of the permanent elements, and of the persistent elements – natural and manmade, historical, and documentary – as a structuring and structural feature for configuring: ecological, green, and water networks, and networks providing connection between ecological components with different levels of nature content; networks of regeneration of the landscape features in the different natural and manmade components; networks valorizing historical/documentary/architectural elements, architectural landmarks, historic routes and paths; morphological networks reconfiguring open spaces, residual and disused spaces, fabrics, and constructed elements. The change in the problems linked to urban planning, the environment, and landscape, and consequently in the objectives, contents, and territorial scopes of reference of the plans [2] induced by the new urban question thus underscores how regeneration, as a strategy for the government of the contemporary city, and for the construction of a new *urban welfare*, requires developing a new conception that, particularly in the last decade, has seen the convergence of many research efforts and experiences on a national and international level [9].

These research efforts and experiences focus on a multitude of areas of knowledge, and have yielded new viewpoints and practised new approaches, at any rate characterized by the trend towards overcoming logical devices linked to the concepts of *separation and counterposition*, in favour of a new dimension marked in terms of integration, interscalarity, interdisciplinarity, and iterativeness, which restores and is well suited for the traits inherent in the strategy of regeneration [5].

In particular, in Italy, the concrete experimentation done in plans, programmes, and reformist designs since the 1990s, presents a considerable disciplinary and operative heritage to start from, for the purpose of developing new perspectives and new cognitive and design references, that recover

significant relationships between physical components and socioeconomic components of change, between understanding and proposal. In the setting of a reflection that is thus placed in an advanced phase of a stratified process of innovation of the lines of intervention for the existing city, this experimentation brings into play new forms and new content of plans, progressively extending – in territory and time – the purview of urban planning to ecological and environmental issues [10], to active protection and the interpretative and design valorization of the historic territory [11], to urban requalification, to sustainable mobility. Also brought into play are new instruments, and mechanisms for implementation and for obtaining ordinary and extraordinary resources, for giving substance to the notion of urban regeneration [2]; all this once again highlights the urgency of grappling with the knot – a knot unresolved and underestimated for too long – of a reform of national urban planning legislation that synthesizes and provides certainty of the right to the many innovations introduced in the different legislative and planning experiences.

This attention by Italian and European urban culture to a sustainable, inclusive, and heritage-led regeneration finds important convergence in the Chinese Government's "*National New Type Urbanization Plan 2014-2020*," which sets out the guidelines for a new phase of urbanization, inspired by the so-called "Chinese dream" for an economic development combining the country's modernization process with the valorization of identity characteristics.

The notion of urbanization, born and spread in China in the late 1990s, therefore adopts new guidelines for a sustainable development based on a new "person-based" vision for greater social equity [12], bringing about today a significant change of the references for the analysis and planning of the city and of the territory [13]. The regeneration of the existing city as a strategy directed towards environmental sustainability and social inclusion is consequently a common theme also within the *2025 Italy-China Action Plan* which, in the context of scientific and technological cooperation, identifies, of the eight key sectors, specifically the one of sustainable urbanization.

1.3 Regeneration and experimentation. Prospects and articles

The question of what are the theoretical/methodological and operative references to be brought into play in order to activate a generalized strategy of urban regeneration and of restoring the territorial balance of contemporary Italian and Chinese cities and territories, through the development of a networked system that takes on the "sign" of the invariants, of the permanent elements, and of the persistent elements – natural and manmade, historical, and documentary – as a structuring and structural feature guaranteeing a sustainable urban development, is the thematic nucleus of certain international research activities in progress at the PDTA (Planning, Design, and Technology of Architecture) Department at Sapienza University of Rome, in the context of agreements and protocols of cultural and scientific collaboration with some Chinese Universities.

It is a question that draws from and gives substance to the generalized awareness of the importance of the historical and environmental components such as the "development engine" [14] and urban regeneration as a strategy of reference for the government of the contemporary city.

The many viewpoints and approaches arising from the research and experiences conducted nationally and internationally, the specific nature of the geographic/territorial and socioeconomic contexts and of the related regulatory frameworks, as well as the multitude of disciplines involved, raises the need for a dialogue aimed at experimenting with a global gaze that, starting from an examination of best practices, manages to identify common references for defining new procedures, instruments, and mechanisms of implementation. Towards this end, the putting into play of a new, integrated and comprehensive conception for the networked (re)construction of the public city, which constitutes the focal point of deeper examination cutting across the different experiences of urban regeneration, has seen a convergence that may be found in the definition of new references of an experimental character of proposition, ascribable to three complementary and interactive *perspectives* – *structural, morphological, and environmental* [5]. These perspectives correspond with lines of action and of specific intervention, set out in the different "networks," with reference both to the most manmade metropolitan contexts, and to the more marginal areas of contemporary territories.

In this framework, the article discusses dealing with two territorial settings, starting from the reading of the systems of historic and natural permanent elements in Italy and China respectively: the metropolitan City of Rome, with particular reference to the relationship with the system of the Tevere-Aniene rivers, and the Province of Jiangsu, traversed by the Huai and the Yangtze Rivers and by China's Grand Canal. The article highlights the systems of the physical-natural and hydrographic, historical-documentary, and cultural components and of their routes and signs, in their mutual interactions, that have a structural, morphological, and functional value of the urban and extra-urban territory and of its formation on the local as well as territorial scales. It also emphasizes the role these play within the strategies of regeneration and of restoring territorial balance, implemented by different programmes, plans, and projects referring to different institutional levels and different scales of intervention, in order to trigger processes of consolidation and valorization of the *forma urbis*.

In this setting, and in keeping with the research method, the systematization of the two case studies has adopted an interscalar and integrated approach, managing to outline a grid of methodological and operative references, through three different disciplinary perspectives (*structural, morphological, ecological-environmental*), and three planning levels (*large area, urban, local*).

The *structural perspective* sets out the structural dimension of *urban welfare* and its sociopolitical connotation of “space for citizenship, community, and cohesion” [15], as well as the socioeconomic one of “common good,” which finds correspondence in the construction of the public city, a system of areas and of public services innervated by public mobility on an urban and metropolitan level, as a primary structure of reference, the very foundation of the *principle of planning*, to guarantee the rights to education, health, and home, and more recently, to public mobility and to social housing [3].

The *morphological perspective*, starting from recognition of form [16] as a cognitive and design tool for grasping the specific features of the places on all scales, focuses attention on the construction of the public city, taking on the morphology of the permanent elements as an expression of the historical-cultural and social identity of the local communities, and as a means for the recomposition – in contrast with the fragmentation of the contemporary city – of the link between physical continuity and social integration, and between formal specificity and cultural identity [4]. The infrastructures and historical paths are therefore configured as elements structuring the territorial palimpsest [17], cultural specificities, and economic and social activities, as well as an occasion for the (re)construction of public space on the large, urban scale, and on the local scale.

The *environmental perspective* refers to the public city as an *engine of sustainable development and of environmental regeneration*, which guides urban-planning and construction transformations towards the existing city, linking each intervention to concrete actions for improving the fundamental resources of air, water, and soil [7]. The reconnection of the ecological networks and the valorization of “natural capital” are aimed at putting back together the design of the natural-environmental components and at strengthening ecosystem services, through the development of ecological networks that reconnect and strengthen the hydrographic and vegetational components, thereby placing the urban environment in synergy with the extra-urban one, the manmade components with the natural ones. All this contributes towards environmental well-being, risk mitigation, and the landscape quality.

Within this methodological approach, the emblematic nature of the case studies introduces specific operative references for analysis and for intervention in the existing city, for the purpose of a reconfiguration of the arrangements towards scenarios of urban quality, sustainability, and resilience, connected to the valorization of historic infrastructures and ecological networks.

2. The Tiber-Aniene System. A strategic planning zone for urban regeneration

2.1 The structure of the territory, identity features, and the historic-environmental resources

In recent decades, the “Roman area” has been the subject of numerous studies and research efforts aimed at more deeply examining “its prevalently open spaces, with their physical, natural, and manmade connotations, with their values, their functions and uses.” This has been done through integrated approaches that have highlighted the environmental and historical structure, not only for the purposes of conserving and enhancing the different components, which found correspondence in the perimeters of the numerous protected areas present in the metropolitan city (Law no. 394/91 and subsequent modifications and supplements), but also in the conviction that “the resources and the physical-naturalistic as well as historic features – considered as a system and in their reciprocal interrelationship – are to be taken as a primary, priority element, ordering and qualifying in the physical, functional, and formal re-organization of the manmade territory” [18].

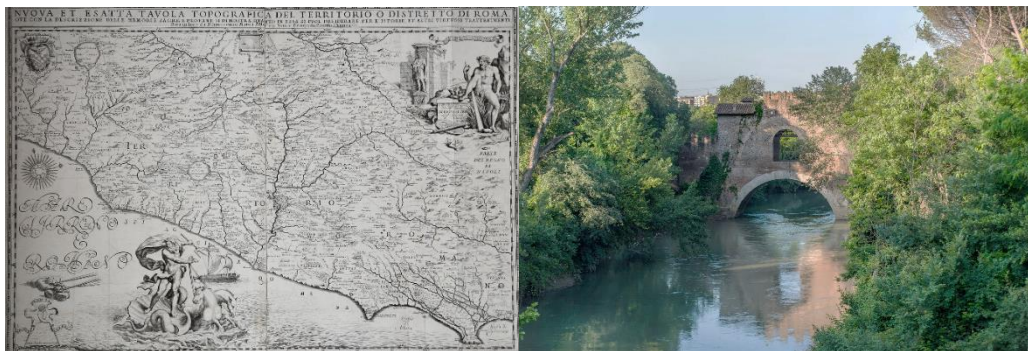


Fig. 1: I. Mattei, *Nova et esatta tavola topografica del territorio di Roma*, 1674 (left). Ponte Nomentano River (right).

The Roman area, comprised between the volcanic slopes of the Monti Sabatini, the Colli Albani, Monti Tiburtini and Monti Simbruini is, in fact, a strongly interrelated set of physical, naturalistic, and historic networks that find two structuring components in the waterways of the Tiber and Aniene rivers. This

river system has significantly influenced the uses and characteristics of the surrounding plain, as well as the historic relationships between Rome, the centres on the mountain reliefs including Tivoli, home to two UNESCO sites, and the coastal centres like Ostia, recently named a European Heritage Site.

This system is strongly linked to the features of geomorphology and vegetation, as well as functional vocations and forms of mobility, and lastly the morphology of the farmland structures, the urban open spaces and fabrics, which over the centuries have seen the stratification, in the territorial patterning, of a multitude of interrelated resources marking the landscape, the economics, the urban form of Rome. From a historical and morphological perspective, the city, in the Tiber, finds an original physical and symbolic component, right from its foundation myth: Rome and its rivers in fact represent a “pairing of mutual need” [19], that traverses the history of Rome at least until the industrial phase, when Porto di Ripa was still recognized as a hub capable of conditioning the placement of industrial settlements and characterizing the river spaces as arteries for trade flows [20].

From a structural perspective, both the Tiber and the Aniene rivers have for centuries been two transport axes that enabled the linkage between Rome and Ostia, as well as commercial relations related to travertine, between Rome and the eastern sector of Lazio. This communication system is connected to the system of the consular roads, which represent equally significant morphogenetic routes in the City, the Province, and the Region. This system’s gradual development contributed towards the building of a network of historic places and constructions – ports, bridges (like Ponte Nomentano), warehouses, in part still cornerstones of the existing urban morphology and of the historic urban landscape – strongly attacked by the development first of the railway network and subsequently of the twentieth-century road network, as well as the settlement system, the latter in particular starting from the 1950s, and later also by virtue of the oversized provisions established in the 1962 General Regulatory Plan (PRG).

From a naturalistic/environmental perspective, the valleys of the Tiber and the Aniene are ecological corridors vital to the system of open spaces which, from the valley bottom areas reach the adjacent terracing and plateaus, surrounded by the secondary hydrographic network, which gave rise to the *pianura incisa*, or “graven plain”. This environmental system is fragmented due to the proliferation of settlement, interrupted by the construction of nineteenth-century embankment walls (built following the 1870 flood), and traversed by rapid automobile traffic along the urban stretch of the Tiber.

While the construction of the functionalist-type embankment walls fulfilled the role of protection from the floods that had earlier stricken the city, on the other it resulted in a considerable caesura in the age-old landscaping and functional relationships between the river’s naturalistic profile and the architectural “visual landmarks” [21] placed along the two banks.

2.2 Design objectives and components

In this setting, the twentieth century in fact brought about a gradual structural and perceptive distancing of the city’s life from the river, perpetrating an aggression against its habitat, through a proliferation of settlement along the banks, leaving the natural and cultural patrimony in a state of abandonment, and marginalizing river activities. This is in spite of the fact that the Tiber-Aniene river system has been targeted, at least during the past two decades, by a multitude of planning tools that have recognized its structuring and strategic role from the ecological-environmental, functional, infrastructural, and historical-morphological standpoints. These tools articulated and overlapped with protection regulations and forecasts of interventions aimed at valorizing these settings, thereby helping put together a general, fragmented picture in which it is not always possible to reinterpret a unitary, integrated, and multiscale strategy. This complex framework of reference is composed in the first place of the prescriptions related to the management of water resources, of hydraulic defence and of aquatic ecosystems, in keeping with European Directives; the *Piano di Bacino idrografico* [22]; and the *Piano del Distretto idrografico dell’Appennino Centrale*. The complexity of the framework is increased by the development of Plans for functional and/or territorial excerpts, as well as that relating to the *metropolitan section* involving Roman territory from Castel Giubileo to the outlet. The year 2019 also saw the approval of the *Piano Territoriale Paesistico Regionale*, which relates to the protection and valorization of landscape assets, and, beyond the regulations protecting landscape settings extended to the entire territory, also calls for establishing “settings of recovery and of landscape valorization” in the urban stretches of the Tiber from Castel Giubileo to Piazza Mazzini and from the Ostiense neighbourhood to Fosso della Magliana, as well as, for the Aniene, three areas in Pietralata, Rebibbia, and Salone.

Added to this is the institution of the *Natural Protection Areas* [23], whose planning is aimed at articulating the levels of protection and defining interventions for requalifying and restoring the landscape, promoting compatible services. However, the system of Lazio’s regional protected areas currently includes only the Aniene river for the part inside the ring road (GRA), comprised in fact in the *Nature Reserve* instituted with Regional Law no. 29/97 [24], pending final approval of the Park Plan. The adopted plan calls for a valorization of the *System of crossings* and of the *System of historic routes and of new visiting circuits*, inside the Reserve, reconfiguring urban and extra-urban routes in a network. The Protected Areas system is targeted by proposals for completion in correspondence with the Tiber and Aniene, including that of additional protected areas; these proposals have never been approved.

In particular, the Piano Territoriale Provinciale Generale (PTPG) of Rome, approved in 2010 [25] and aimed at protecting and promoting the characteristics and values of provincial territory, as well as at guiding the processes for the territory's transformation and development, gives prominence to planning a protected area of the Tiber, linking the Riserva Naturale del Litorale and the Aniene, including the extra-urban section, identified between the ring road and the Fiano Romano-Valmontone motorway. This provision would contribute to the design of a *Provincial ecological network*, the “first element ordering the settlement arrangement and a condition of environmental requalification and generalized sustainability for the whole territory – a scheme of environmental places, of green paths, and of protected productive agricultural spaces, reserved for social uses and recreation” [26].

The PTPG thus recognizes the Tiber and Aniene valleys as structuring elements of the provincial ecological network and the territorial and urban morphology – the object of the necessary actions of defence and overall security – and of the basic natural resources of air, water, soil, flora.

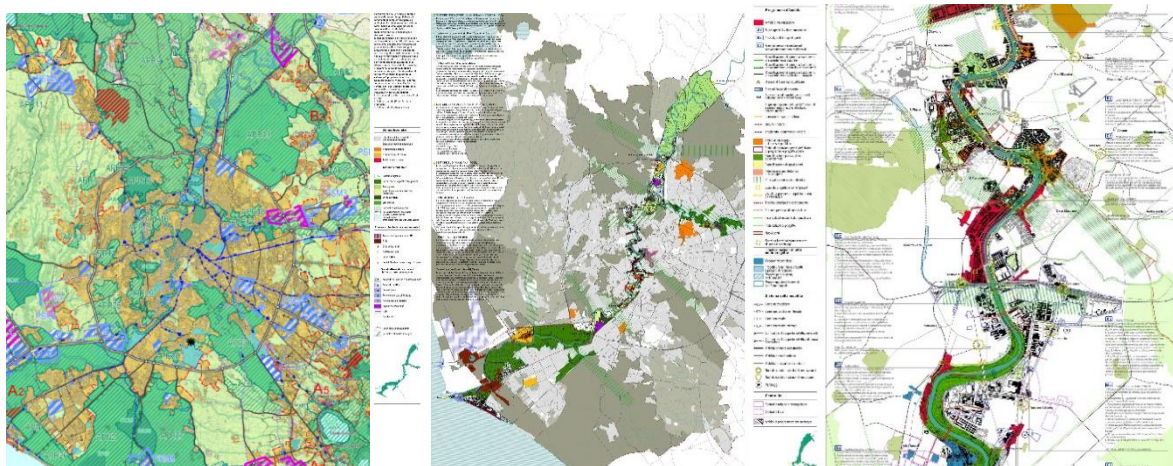


Fig. 2: Protection and Enhancement of the Historical-Environmental System. PTPG (left), PRG (center and right).

The objectives of defending and valorizing the river system are also broadly treated in the Piano Regolatore Generale – PRG '08 of the Municipality of Rome, approved in 2008 [27], which, in the *primary component* of the *Municipal ecological network*, comprises the floodplain areas of the Tiber and Aniene, as well as the indispensable green connections cutting through them, which surround the secondary hydrographic network linking to the orographic reliefs. Of the structuring interventions, PRG '08 also introduces the Tiber strategic planning zone (*Ambito di Programmazione strategica Tevere*) [28] aimed at contributing to its ecological and hygienic/sanitary recovery, and to repairing the morphological, perceptive, and functional relationships between city and river, through the urban design procedure.

Specifically, from the structural standpoint, the objectives of the strategic planning zone refer to the importance of strengthening the Tiber-Aniene system as a *public bike and pedestrian mobility corridor*, limiting the space dedicated to vehicular traffic for the purposes of greater quality, accessibility, and permeability of the basin – lengthwise, crosswise, and vertically (between river level and road level). This is also in a scenario of a relaunch of river navigability, capable of linking the main lines of urban transport and of proposing “slow exploitation” as a criterion for valorizing the landscape.

From the historical-cultural and morphological perspective, the *Ambito*, in its urban section, calls for regeneration of the river basin as a public space on a vast scale, reinforcing the morphological and perceptive relationship with the historic architectures and the urban oblique axes, and restoring the spaces along the river for cultural and social activities in the context of a revitalization and reconfiguration of the Savoy-era embankment walls.

The extreme complexity of this interscalar and inter-institutional strategy has also stimulated the activation of a new set of instruments of a voluntary, institutional nature, such as the *River Contracts* [29], for certain stretches of both the Tiber and the Aniene, aimed at putting processes of strategic and negotiated programming into play with the collaboration of public and private parties.

3. The Southern Salt Town System of Jiangsu Province

3.1 The structure of the territory, identity features, and the historic/environmental resources

The urban development of Chinese coastal areas is highly interrelated with the historic system of waterways, of natural and manmade origin, which to this day represents an element ordering structure, identity, and urban and extra-urban landscape. In particular, the Province of Jiangsu, which develops along China's eastern coastline, is traversed north-south by the Grand Canal linking Beijing to Hangzhou, a historic infrastructure recognized as a UNESCO heritage site since 2014, and east-west by the Huai river and the Yangtze (Yellow River). Between these rivers, history's most ancient salt production area came into being, with the greatest production and sales volume and the largest market

area: this region's first two “salt cities” developed during the Han Dynasty in 202 BCE – 220 CE; during the late Qing Dynasty (1636 CE –1912 CE), more than 30 “salt cities” had formed an urban system with a multi-level structure [30]. The territory’s transformation around the salt manufacturing industry represents the outcome of a complex of actions by the public government, of the communities’ culture, and of nature itself through the various phenomena (the tides, etc).



Fig. 3: Southern salt town area of the Jiangsu Province in China in 17th century (left). Lake of Jiangsu (right).

These three components modelled a unique form of urban, territorial, and landscape system linked to salt production, with a balance of roles varying depending on the different levels of reading and the scales of intervention. On the metropolitan level, the national government denominated the hierarchical organization of the city system; on the urban level, natural phenomena took on a role of increasing influence over cities’ placement and hierarchy, and over land use. On the local level, culture has exercised greater influence in configuring the morphological characteristics of the urban centre.

In the structural perspective, the system of “southern salt cities” of the Huai River is part of the national urban system based on the national policy of State salt monopoly. Under national control, the salt cities, organized in three ranks, rise in correspondence with water transport nodes, on differing levels depending on the rank. Two first-level cities are located at the intersection with the national main network, where the highest organization of the Region’s official management controlled transport from the production zone to the corresponding sale area: Huai’an, located at the northern intersection between the Grand Canal and the Huai River, and Yangzhou, at the intersection between the Grand Canal and the Yangtze River. Three middle-level cities, where salt production is centralized for warehousing, are situated on the hubs of the network of waterways linking the salt production cities and high-level cities. About thirty salt-producing cities are found at the terminus of the water network, where local official organizations were responsible for the organization of salt construction and city building [31].

As to the environmental perspective, the enormous engineering works – the Grand Canal and the Fan Levee and its canal – changed the ecological habitat and the form of the territory, influencing the salt cities’ position in the Region. In 1024-1027 CE, the Fan Levee and its Canal were completed along the ancient sandbanks – which had formed naturally beneath the tide approximately 6,500-3,200 years earlier – to protect farmlands from the tides. The design divided the two plains: the coastal plain and the river plain, whose formation is to a large degree due to the Levee on the canal.

In terms of the morphological perspective, all the salt-producing cities were aligned along the Levee and the Canal at a distance of approximately 9 km from one another on the Levee, corresponding to a one-day round trip on foot. The distance from the city to the sea, which also corresponds to the one between the Levee and the sea, is about 30-50 km. These two distances determine the city’s rank [32]. The land use models of the types of salt-producing cities are similar, and depend on the type of coastal land and the salt production process. The type of terrain is influenced by the tides of different frequencies, which formed the sandy coast and yielded a continuous band/belt form: a band of farm areas, a band for salt production, and a band for fishing. The soil in each segment has different components relating to salt, land cultivation, and distance from the sea, which directly limit the framework of reference for salt production (Fig.4). The Grand Canal draws water from the surrounding environment to guarantee navigation. Many salt cities are situated in correspondence with the Grand Canal, also for the linkage network between it and the sea Levee. Therefore, the distribution of land use in the cities shows an articulation of the belt in three parts, connected by the hydrographic network: the setting of the cities; the grassy beach and boiling places; and the expanses and mounds of salt.

Although the structure and organization of the land use within the urban typologies are essentially the same, the morphology of each salt city differs depending on such environmental components as the local terrain, the canal’s path, etc. Moreover, the most important factor influencing the distinctive and identity characteristics of every city is the context of the local community with its buildings, structures, and corresponding cultural activities [33]. In these cities, numerous religious temples are grouped in the

most external and border areas; craft workshops of various regions are found on both sides of the main market-road; the residential buildings present recognizable styles connected to the traditions of the settled communities; popular activities change from city to city, and depending on the time of year; public structures – offices, schools, collective activities, bridges, locks and canals – are highly influenced by the local culture that integrates with the needs of modernization[34].

3.2 Design objectives and components

Following the urban and transport-systems modernization phase, and with the reform of the National system of the salt industry, this traditional and unique settlement-morphological structure, linked to salt production was gradually disappearing. The decline of the salt industry, then, raised a debate on the transformation of the urban economy and of the organization of cities. Until 2009, the per capita GDP in the coastal areas of the Province of Jiangsu corresponded to one half of that of the entire Province, and also to one half of that of the eastern coastal zones of the Provinces of Shandong, Zhejiang, and Guangdong. Since the mid-1990s, rapid urbanization had at any rate induced strong pressure on the traditional coastal cities: abandonment by the young generations, restriction of the craft industry market, and delayed construction of infrastructures have further worsened the quality of life.

In 2009, the provincial government of Jiangsu developed the “Development plan for the coastal areas of the province of Jiangsu,” which was adopted by the National commission for development and reforms, and approved at an executive meeting of the State Council. The Plan, which adopts the coordinated national policy of regional development, aimed at reinforcing regional cooperation through rational and coordinated development of urban and rural, land and sea areas, integrates economic, social, and environmental strategies for a development attentive to resources, respectful of the environment, and providing guarantees for the weakest.

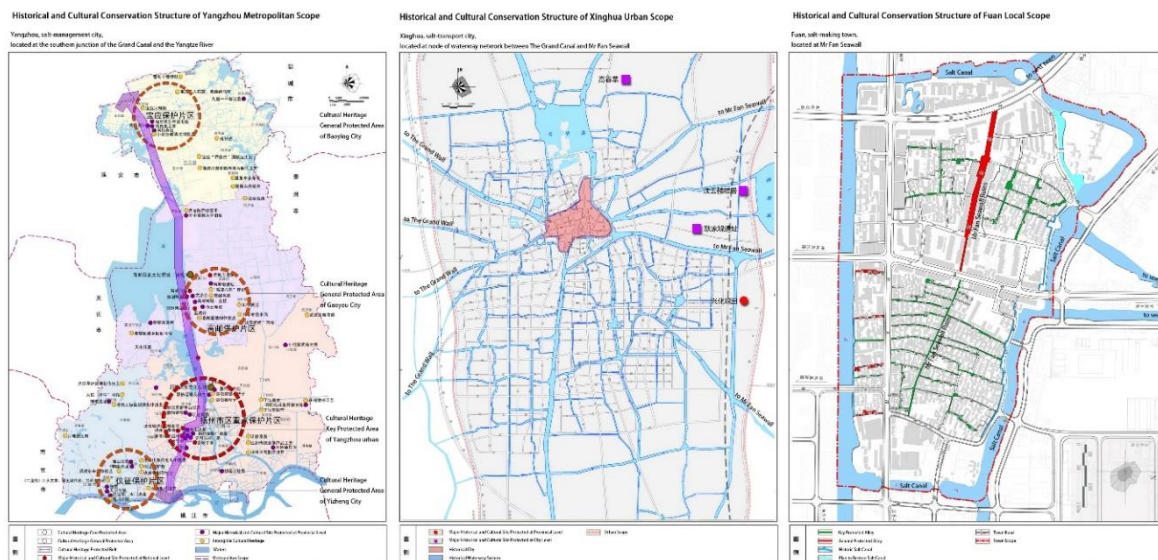


Fig. 4: Historical and culture conservation structure in three Levels of different grade salt towns

The coastal urban area was thus transformed into one of the three development axes of the urban system and one of the three channels for the construction of the *One Belt and One Road* strategy in the Province of Jiangsu. The interventions of the plans and projects in progress refer to three spheres of action with important repercussions on urban regeneration, which involve the various levels of planning from the Provincial down to the urban scale.

The first sphere of action relates to the protection and environmental restoration of the components of ecological interest, with particular reference to the “*Jiangsu Province Urban System Planning*” and the “*Ecological Environmental Protection Planning of Coastal Areas in Jiangsu*,” which pursue a sustainable development able to enhance the identity characteristics of the coastal natural environment, maximize urban resilience, and strengthen environmental security, through:

- . maintenance of the geomorphological natural and artificial components, including the Fan Levee, its canal, and the land use characteristics;
- . restoration of the wetlands in the tidal plans for the purpose of maintaining biological and ecological balances and the vegetation on the coastal plain;
- . drainage of wetlands and of marsh ecosystems on the river plain, protection of the group of sandy dunes on the sea coast;
- . recovery of the integrity and connectivity of the water network and of the land-sea ecosystems, also through the consolidation of the engineering system controlling the basin’s flooding;

- . the recovery of the regional irrigation and water transport systems, dredging the water network's regional dorsal canal and expanding the draining in the sea and the river;
- . coordination of interventions to valorize the sea economy with those relating to the territory;
- . the safeguarding and improvement of ecological resources, through the strengthening of the vegetation components along the canals and in the tidal flooding areas, to form ecological protection barriers, both along the coasts and around the cities.

The second sphere relates to valorizing the historic and landscape resources as an engine of regeneration, through the strengthening of the inter-municipal territorial network, able to provide cultural recognizable to the historic territory and to promote a coordinated strategy in developing tourism.

In particular, the government of the Province of Jangsu, also through the "*Strategic Planning of Urban and Rural Spatial Features*," pursues the coordination of the management of marine resources and public services, to promote employment and for the management of economic resources, through:

- . the construction of landscape networks with a high nature content, safeguarding the characteristics of the coastal and terrestrial landscapes, to connect the different resources: dams and sea embankments, mounds, forests, grassy beaches, canals, lakes, etc;
 - . the protection of historic infrastructures, including the Grand Canal, the traditional salt transport routes, the routes linking the historic salt cities and other paths of historic interest;
 - . the management of the historic/documentary assets and of the intangible heritage, through the valorization of industrial archaeology and coastal defence, as well as the connected religious traditions.
- The third aspect regards the valorization and revitalization of the historic city on the local scale ("Historical and cultural urban conservation plan"), through:

- . the valorization of the canals and of the vegetation components, with green areas and public spaces;
- . the valorization of the main urban axes, also through traditional craft exhibition and the proposal of economic and cultural strategies to support the inheritance and development of traditional industries;
- . the conservation and valorization of the buildings and of the urban spaces with traditional characteristics, like temples, through traditional popular events and cultural activities;
- . the conservation of private historic buildings, through management regulations and technical guidelines for protection and restoration;
- . the promotion of the associative activities of communities, through training and public participation.

These measures are implemented on various levels of planning through an iterative and interscalar process: each level of planning corresponds to a process by phases of implementation of the projects. The individual plans are updated to be integrated into the government administration's five-year plan.

4. Urban regeneration and experimentation. Lines of action

The systematization of the two case studies makes it possible to outline, in line with the most advanced national and international-level experiences, some structural lines of action that take on a priority role in the context of the strategies of urban and territorial regeneration.

The first line of action relates to the reconfiguration and strengthening of urban and metropolitan mobility, through the development of a network of public paths strictly interrelated with the water corridors, in accordance with principles of sustainable mobility, with particular reference to strengthening bike and pedestrian accessibility and to relaunching the navigability of rivers and canals. The intervention along these corridors thus presents an occasion for regeneration to foster non-polluting mobility.

The second line of action relates to valorizing the morphological and perceptive relationships, between the waterways and the urban landmarks, ancient and modern, while stressing the morphogenetic role of the waterways and restoring the river basin spaces for uses linked to sociality, culture, and leisure. The intervention along these corridors presents an opportunity for regeneration, in order to experiment solutions of architectural reconfiguration and of design, reconciling conservation and innovation.

The third regards environmental recovery and the ecological reconnection of open spaces and of components of greenery and waters, as prerequisites for any valorization intervention. Intervention along these corridors presents an opportunity for regeneration through renaturalization actions indispensable for managing environmental risks and for valorizing the landscape characteristics.

Lastly, a priority field of research and experimentation for protecting and valorizing historic and natural heritage and for urban regeneration relates to the need for inter-institutional and inter-sectoral coordination, with reference to the various instruments and levels of planning and management and to interventions in the implementation phase, by putting urban projects into play to integrate the areas of knowledge and stakeholders. This will permit convergence towards shared paths and objectives.

Attributions

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