

ABSTRACT

As is emerging in several contemporary studies, there are city-port contexts in which it is increasingly possible to identify new port resilience practices, namely those capable of overcoming past design situations and providing new perspectives on the city-port relationship; these practices are intervening in a prioritized way on the common border. Within these contexts, the capacity of port systems to engage with the city and, while still maintaining their operational aspect, to mitigate the effects of the demarcation generated by property borders can be seen. What further emerges is that ports are extensively fostering practices capable to go beyond the traditional port perimeter; this is contributing to turn the port into a driver of strategic projects. New urgencies, e.g. the harmful acoustic impacts generated by the port noise, are even enhancing the relevance of common borders, becoming new design challenges. These factors are all decisive in the case presented by this article which concerns a portion of the city-port interface in the port of Genoa-Prà. Thanks to the cross-border INTERREG project *RUMBLE* and its translation into *The Dunes Urban Park*, this case represents an effective port resilience practice that, by contributing to the redesign of the city-port ecosystem through a multi-dimensional approach, it is opening an unprecedented perspective of multi-scale territorial clustering between several ports, cities and institutions.



Port Resilience Practices. The Ecosystem Vision and the Cluster Concept within the *RUMBLE* and *The Dunes Urban Park* projects in Genoa

Beatrice Moretti¹

¹ PhD Architect, Research Fellow, Lecturer. Department Architecture and Design (dAD), Polytechnic School of Genoa. Genoa, Italy. beatrice.moretti@unige.edu.it

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Introduction

A City-Port Relationship between Closeness and Conflict

Being on the Genoa-Prà waterway, it is not unusual to notice the overlapping of functions, types of infrastructures and possibilities of use of these marine and terrestrial spaces. On the port front, in the large commercial platform PSA Genova Prà, container movements alternate between the port cranes, trains and trucks enter and leave the terminal continuously; at night, one can observe and hear the docking and mooring operations of the largest container ships that Genoa can accommodate. On the urban front, just on the north bank of the terminal, a large canal basin separates the operational area from the city and hosts rowing sessions and competitions. Several maritime facilities, i.e. fishing pontoons and boats, pleasure boating and refitting/repair small shipyards, support the daily activities which animate this portion of the coastline along with a busy system of sports associations. A pedestrian and cycle path, lived by citizens for sports and social events, runs along the northern front of the terminal and connects with the urban side where underground links lead to the local train station connecting to and from the city-center. Very often planes take off from the nearby airport flying over the terminal, enriching the, also sonorous, diversity of this place.

What is experienced in this stretch of urbanized coastline is the complex multi-dimensionality of the city-port ecosystem and, along with it, the genetic dynamism of the border landscape (Figure 1). Also the hybridization of forms and languages is evident here, confirming that, as Broeze argued, «there is a clearly distinct semi-maritime semi-terrestrial urban structure on the physical border between land and sea» (1997).



Figure 1. View of Genoa-Prà waterway, in particular of the water canal, Canale di Calma, close to the PSA Genova Prà container terminal. (Source: Port System Authority of the Western Ligurian Sea, 2000-2001).

As the product of a meaningful process of co-management and co-planning that began two decades ago, this portion of the port-city border located in the most western portion of the Genoese port, embodies in an exemplary way the genesis and the evolution of the city-port relationship or, rather, conflict. However, thanks to its most recent design developments – of which this contribution deals – it also represents a significant case of regeneration of the city-port ecosystem, capable of exploiting the genetic dynamism of the interface spaces between urban and operational areas.

The port city itself is the result of a relationship between two territories and two entities: its very definition depends on the intensity of this linkage and the degree of closeness, or conflict, that the two sides have established over the years. While at the outset of maritime trade and for many centuries thereafter, ports appeared within the urban layout as real public works of architecture. In more recent times, the restructuring of the equilibrium between the urban, the economic, and production, as a result of global phenomena, has reshaped ports in terms of services and spaces, transforming them into hubs of an ever more articulated international network. These changes translate into the relocation of port functions away from the port limits and, even more so, into the transition from the *emporium port model* to the *gateway port model*, which represents the ports as the origin or destination of the great transoceanic routes. This process, similar to the industrial one, has initiated several cycles of port dismantling that have affected architectural spaces and artifacts.

Geographer César Ducruet¹, together with other scholars on the topics of maritime geography and evolution, believes that the evolution of commercial logic and the gradual dismantling and restructuring of port areas since the end of the twentieth century have made the concept of a port city increasingly confused. Due to actions at the end of the twentieth century that reconverted disused port areas, in many cases re-establishing the link between the historic centers and the sea (but not the port), the idea solidified that in order to transform urban spaces near the port it was essential to replace and/or remove the port. These practices, in fact, contributed to fueling the dichotomy between port and city, instead of imagining a different project between the two entities: this actually negated any potential interaction and denied the figure of the port within the city. It is evident how these (and other) metamorphoses have steered the evolution of the city-port organism.

However, as is emerging in several contemporary studies², there are city-port contexts in which it is increasingly possible to identify new port resilience practices, namely those capable of overcoming past design situations and providing new perspectives on the city-port relationship, intervening in a prioritized manner on the common border. The idea of resilience expressed in these practices, though, does not only have to do with environmental aspects but with the search for strategic approaches and sustainable governance models to innovate the city-port debate and design ambit. In these contexts, the capacity of port systems to engage with the city and, while still maintaining their operational aspect, to mitigate the effects of the demarcation generated by property borders can be seen. What further emerges in these examples is the way the city-port project can be implemented without relocating the port, instead putting into play a new idea of coexistence³.

¹ Several scholars have contributed to the port geography's studies, e.g. Bird, Hoyle, Murphey, Ducruet, Notteboom, etc. Cf. Ducruet C., Jacobs W., Monios J., Notteboom T., Rodrigue J.-P., Slack B., Kachai T., Wilmsmeier G. (2010) Port geography at the crossroads with human geography: between flows and spaces, *Journal of Transport Geography*, no. 4, 84-96, Amsterdam: Elsevier.

² Moretti B., Canepa E. (2020) *La città portuale. Nuove tracce per la ricerca contemporanea*, Territorio, Section Percorsi, n.95, Milan, Franco Angeli, 178-181.

³ Cf. Bruttomesso R. (2011) *Port and City: from integration to coexistence*, Bruttomesso R., Alemany J. (eds.), *The Port City of the XXIst Century. New Challenges in the Relationship between Port and City*. Venice: RETE Publisher.

Topics

The City-Port Threshold as new Field of Research and Design

Decisively grown beyond the cities that generated them, several port cities are today moving forward the boundaries of the project and management by developing new tools for cooperation and co-design. By doing this, they are also fostering actions outside their traditional perimeter and overcoming the usual horizons of the regulatory plans which, in many cases, are still anchored in planning jurisdiction in terms of areas and properties.

The interest in these new practices further highlights the strategic role of the common border, or rather of the city-port *threshold*⁴.

Far beyond the idea of a customs barrier or administrative boundary, the city-port threshold is a real and perceptible figure in the daily movement of people and goods, a physical and effective interface that marks a *third state* with respect to the city or the port as usually understood. Literally it is a strip of variable thickness produced and evidenced by the presence of the administrative limit that divides the territory of the city from that of the port. It expands in breadth according to the transformations of neighboring spaces, whether it be dismantling, reconversion, or, on the contrary, expansions in operational terms.

The idea that there is a threshold capable of separating and, simultaneously, connecting urban and operational areas, is even confirmed by major international policies in the field of sustainability and innovation.

Addressing the UN's 17 Sustainable Development Goals, AIVP – The worldwide network of port cities has developed a new 2030 Agenda by adapting the UN's challenges in 10 Goals⁵. Explicitly oriented towards sustainable city-port relationships, AIVP 2030 Agenda takes into account that contemporary ports suffer the most serious consequences of climate change, international migrations and technological and economic upgrades; the impacts of the COVID 19 pandemic crisis, moreover, can only have exacerbated the difficulties of sectors based on exchange, moving flows and travels. Though, contemporary ports are also in the best position to experiment innovative solutions and, for this reason, AIVP includes among its goals a specific strategy for the “City Port Interface” (Goal 8): a place where some of the interesting projects take place, combining uses and creating new synergies. With this, AIVP is confirming its commitment to enriching the scientific literature on the port-city topic and the framework of contemporary practices, as it had already done with the report published in 2015 and entitled “Plan the City with the Port. Guide of good practices”⁶.

The latent potential of the threshold between the city and the port is then combined with peculiar issues. In the case of the Genoa-Prà coastline, for instance, the dichotomy described above materializes in a precise conflict, that of noise pollution produced by the port infrastructure in full operation on the surrounding inhabited environment (Figure 2, 3). To address this conflict – and the challenges it provokes – the local administrations (Municipality and Port System Authority, together with the Liguria Region) have undertaken significant research and design experimentations in the technological field, which has led to the design of a series of projects on an urban scale. These projects contribute to supporting the redesign of the city-port ecosystem.

⁴ About the concept of “city-port threshold”, see Moretti B. (2020) Beyond the Port City. The Condition of Portuality and the Threshold Concept. Berlin: JOVIS.

⁵ AIVP's 2030 Agenda is the world's first initiative to adapt the UN's 17 Sustainable Development Goals for the specific context of city-port relations. The document sets down 10 goals to be achieved by 2030. AIVP's 2030 Agenda is related to the *Top 10 environmental priorities of European ports for 2020* developed by the European Sea Ports Organisation.

⁶ “Plan the City with the Port. Guide of good practices”, available at <https://www.aivp.org/en/publication/plan-the-city-with-the-port-guide-of-good-practices/>



Figure 2. View of Genoa-Prà waterway, in particular of the water canal, Canale di Calma, close to the PSA Genoa Prà container terminal. (Source: Port System Authority of the Western Ligurian Sea, 2000-2001).

In particular – making explicit reference to the “7 Rs” of the Circular Economy model – they propose a *rethinking* of governance models with a focus on processes of co-design of transformative scenarios in terms of city-port sustainability. At the same time, they bring to the forefront the fabric of the city-port threshold in order to *repair* its components according to an eco-systemic vision of the city-port relationship in which the urban design of the coast becomes a driver of transformations.

Not least, the practices undertaken in the Genoa-Prà coastline are *renewing* underused port and port-related areas boosting the attractiveness of the city-port system; this implies the exploitation of different resources (environmental, technological and ecological) and the involvement of local communities in a process of revalorizing the identity of places.



Figure 3. View of Genoa-Prà waterway and infrastructures (railway and highway lines) on the urban side. (Source: Flickr Creative Commons, 2017, available <https://www.flickr.com/photos/125679567@N08/37570923072/>).

Port Noise and Acoustics Impacts as new Design Challenges

As recent studies note, «port noise has been long neglected as if, unlike those coming from roads or railways or airports, the generated emissions were not relevant for the quality of life of exposed population»⁷. This is particularly evident referring to the most recent reports on the issue of environmental noise, such as the “Environmental noise in Europe – 2020” draft by the European Environmental Agency (EEA)⁸. By presenting an up-to-date assessment of the population exposed to high levels of environmental noise and related health impacts in Europe, based on the new World Health Organization (WHO) recommendations, the EEA report devotes particular attention to rail, road, air traffic and industrial noise, while the acoustic impact from multiple port operations – intertwined overlapping noises generated along day and night by ships, cranes, upload and download maneuvers, shipyards, trucks and trains – is basically not addressed.

Additionally, the current national and international laws do not effectively rule the noise irradiated by ports and ships. In Italy, a decree aimed at regulating port noise, required by a 1995 law, has never been issued. This contributes to a particularly inconsistent legislative framework on the topic. Its limited development in the theoretical field can also be read in measurement techniques and tools (sound pressure levels, acoustic cameras, phonometers and instruments able to evaluate the direction of origin and the intensity of the sounds) and solving methodologies that are not adequate for this complexity. Today, in fact, it is still very complex to establish the exact source of

⁷ Schenone C., Borelli D., Di Paolo M., Mangili G., Kamali W. (2018) Characterization of port noise through a measurement campaign, 25th International Congress on Sound and Vibration – ICSV25 “HIROSHIMA CALLING” Proceedings, Section T13 SS5 – EU INTERREG ITALY-FRANCE MARITIME PROJECTS ON NOISE REDUCTION IN HARBORS, 8-12 July, 2018, Hiroshima, Japan: 5054.

⁸ EEA Report No 22/2019, available at <https://www.eea.europa.eu/publications/environmental-noise-in-europe>

noise and, often, port noise pollution is wrongly associated with that coming from road and/or rail traffic⁹. However, the large size of the noise generators coming from the port, the mobile characterization of the main sources (ships, vehicles, cranes) and, last but not least, the large number of people living in port cities make the issue of noise pollution in the port environment extremely pressing.

In the port of Genoa, the commercial terminal of Prà represents the most interesting key study in which the issue of the acoustic impact of the port is frequently at the center of public debate. Also because of the proximity of the high-speed A10 motorway, the issue of noise in these parts of the city is complex to decipher, namely monitoring systems are not always able to distinguish the sources of noise and assess their actual impact, especially on the perception of the neighboring population. Given its criticality, this issue has been the subject of the ongoing EU cooperation project RUMBLE (*Réduction du bruit dans les grandes villes portuaires dans le programme maritime transfrontalier*)¹⁰. With a planned development of 3 years and funded for 1.9 million euros from the European Union's INTERREG IT-FR "Maritime" Programme under Tuscany Region Decree (No 15796, 3rd October 2017), RUMBLE is part of a network of six projects (MON ACUMEN, DECIBEL, LIST-PORT, REPORT, TRIPLO) financed on the theme of "noise and ports" and developed on the Italy-France axis (Figure 4). RUMBLE aims to improve the sustainability of commercial ports by contributing to the reduction of noise pollution in the area of Maritime Cooperation. The project major goal is to respond to an environmental issue that is very much felt in the cross-border cooperation area, where there are many ports inserted in an urban context. The perception of the community, in fact, is often very hostile on the port noise and contributes to the negative perception and sense of detachment towards the places.



Figure 4. The network of six projects financed by the INTERREG IT-FR "Maritime" Programme, 2017.

Monitoring the sound sources that cause noise pollution, RUMBLE is aimed at putting in place small infrastructures to try to reduce the main sources of disturbance, i.e. road traffic of heavy vehicles generated by port activities, the docking of vessels and work on the docks (material mobility, use of buzzers, movement of vehicles, etc.). An initial acoustic climate survey to identify the most critical areas and activities is complemented by the development of landscape and acoustic mitigation measures¹¹. Specifically, the survey is based on data collection of acoustic

⁹ Schenone C., Borelli D., Di Paolo M., Mangili G., Kamali W. (2018) Characterization of port noise through a measurement campaign, 25th International Congress on Sound and Vibration – ICSV25 "HIROSHIMA CALLING" Proceedings, Section T13 SS5 – EU INTERREG ITALY-FRANCE MARITIME PROJECTS ON NOISE REDUCTION IN HARBORS, 8-12 July, 2018, Hiroshima, Japan: 5061.

¹⁰ For a detailed overview of the project RUMBLE – *Réduction du bruit dans les grandes villes portuaires dans le programme maritime transfrontalier*, see <http://interreg-maritime.eu/it/web/rumble/progetto>

¹¹ For a detailed overview of the investigations and applications of the RUMBLE project, see <http://interreg-maritime.eu/it/web/rumble/checosarealiza>

descriptors obtained from monitoring campaigns of the port acoustic climate and surrounding urban areas. By identifying several measurements “spot” points on a map, extending between the coasts of Voltri, Prà, Pegli and Multedo, the project carried out phonometric examining. To complement this, further information concerning the port of Genoa was obtained from the questionnaire delivered to the Western Ligurian Sea Port System Activity in 2019, which also made it possible to systemize historical data.

The measurements carried out in Genoa Prà area show a wide range of values of *L_{DEN}* indicators¹², with noise levels that anyway appear to generally comply with the legal limit values for both the night and the day-evening-night period. However, this result clashes with the various exhibits addressed to the Municipality by the citizens, as well as with the hostile position of the exposed citizens with respect to port noise. RUMBLE, in fact, also analyzed complaints received by port authorities and local authorities on port noise, and by active anti-noise associations. In conclusion, the analysis conducted within RUMBLE showed that the area most affected by constant port noise is the south quay of the PTE terminal, where the loading and unloading of large ships takes place. It also revealed the seasonality of the disturbance and the period of the day most affected: in Genoa complaints are concentrated in the summer season, at night and in the hilly areas of the settlement.

One of the main goals of this integrated cross-border study on port noise is to identify areas for intervention where to implement targeted mitigation actions. In this framework, finds motivation the project of the Dunes Urban Park of Genoa-Prà that the Port System Authority, the Region and the Municipality are realizing to enhance the environment and the health of citizens at the interface between the port and the city.

Methods

The Voltri-Prà City-Port System

Currently under construction, the Dunes Urban Park of Genoa-Prà will complete the public promenade and the bike path already existing and provides for the creation of an urban park interspersed with bays with different uses. However, as it will be explained in this contribution, the project cannot be understood only as a measure of mitigation and reduction of noise, but as a more complex project of integrated and sustainable practices between the two territories. Moreover, the genesis of this project has to be traced back to the history of these places and communities long marked by administrative conflicts between neighboring delegations, struggles for territorial independence and for the recognition of their operative vocation and port identity.

As the westernmost part of the port of Genoa, the port of Prà is also the most recent major expansion, dating back to the late 1990s. Since the expansion plans of the 1960s it was clear that the port of Genoa would expand further westwards, beyond the Sampierdarena piers built during the first part of the 20th century and the airport completed in 1962. The enlargement of the port in the far west was already foreseen in the 1968 Port Master Plan to support the growth of ships and cargo volumes on a global scale. Like other operational structures in Genoa, the new platform was installed on a stretch of free urban coastline, nevertheless the construction of a new container terminal 20 km west of the city center had undeniable commercial and transport advantages.

In addition to increasing the storage area, the new platform provided the port with services suitable for becoming the natural gateway to the Apennine area. The project gave rise to an autonomous infrastructure system, free from the Sampierdarena one, which was already heavily

¹²LDEN, day-evening night level, is a descriptor of noise level based on energy equivalent noise level (Leq) over a whole day with a penalty of 10dB(A) for night time noise and an additional penalty of 5 dB(A) for evening noise.

constrained in terms of traffic. The Voltri-Prà structure, completed around 1997, created a new model of linear port with a better orientation in terms of maritime accessibility (access from the west means that large container ships are not exposed to the strong south-easterly winds) and, thanks to the new freight forwarding infrastructure, projected towards logistics services located inland (Figure 5).

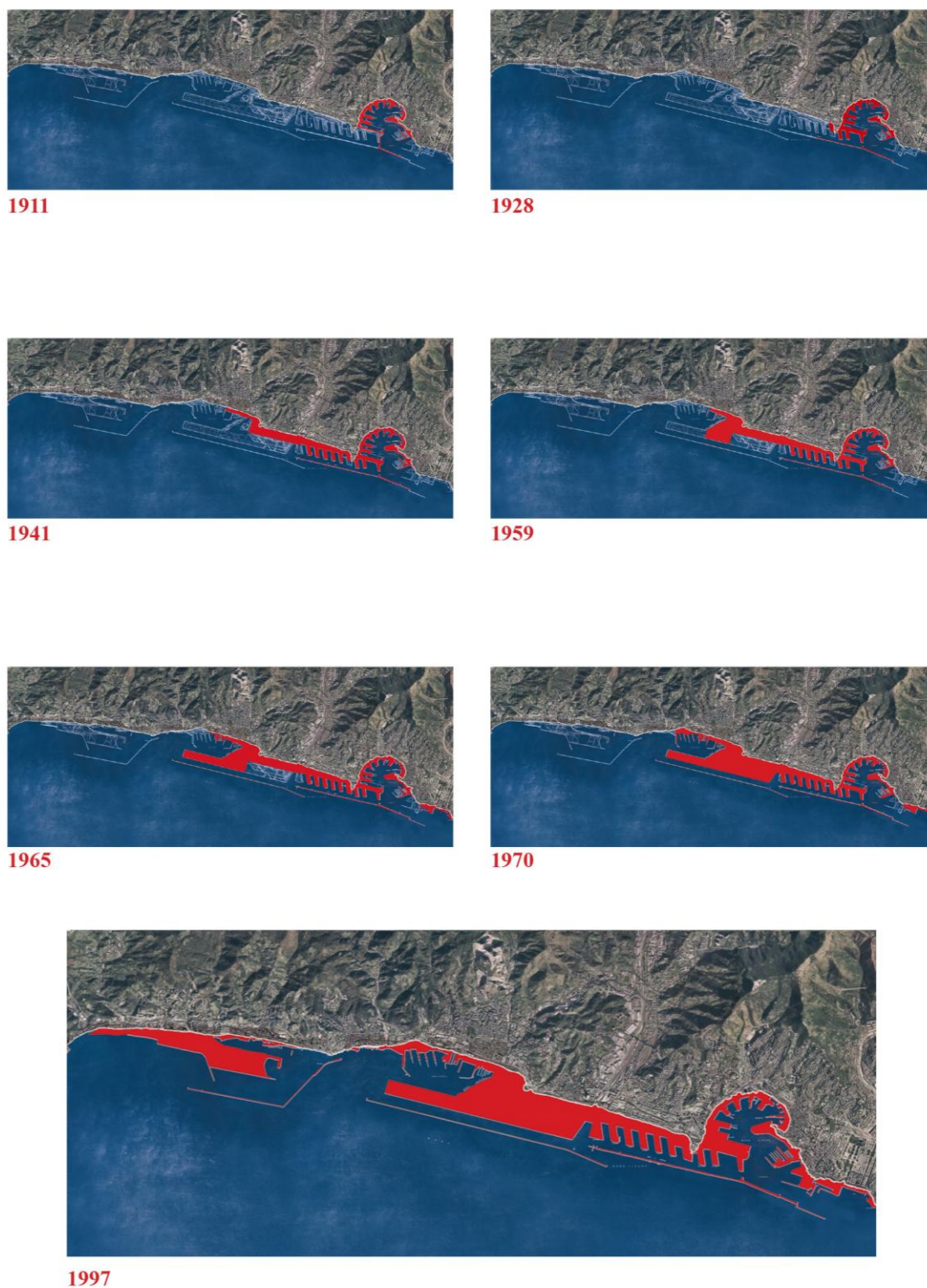


Figure 5. The evolution of the port and of the coast in Genoa, 1911-1997.
(Source: Port System Authority of the Western Ligurian Sea. Graphic Elaboration: Author of the article).

The Voltri-Prà terminal, together with the expansion of the shipbuilding sector to the far east, formed the multi-purpose structure of the port that is still in operation today. In terms of time, the consolidation of the port of Genoa into its definitive structure also coincided with the establishment of the autonomous governing body, i.e. the Genoa Port Authority, formalized in 1994, as long as other 23 Port Authorities throughout the country, by the introduction of the first national port law (Law no. 84/1994).

As in many other stretches of coastline where the port expands its facilities, the repercussion on the existing fabric, especially the urban one, was particularly intense. Since the early years of its operation, in fact, the Voltri-Prà terminal – now PSA Genova Prà¹³ – has been a controversial element. It has radically altered the balance of the area, which was already based on a maritime character, and above all has had a negative impact on the vibrant communities of the neighboring delegations. Coexistence with large goods handling infrastructures and the loss of access to the sea have combined with daytime and night-time noise pollution to exacerbate the community's perception of the port as a harmful component. However, it is important to note that the role of the port as an economic and employment resource has never been questioned by the community, indeed its presence as an engine of growth and territorial competition has always been a key factor in the development and in the identity recognition of the area.

Still, to address this complex situation, the local administrations put in place initiatives and that have allowed, in the early 2000s, the construction of the Prà buffer strip and the water canal (*Fascia di rispetto di Prà* and *canale di Calma*). As illustrated, the urban front flanking the terminal is currently occupied by a linear system of public services, linked to sport (football pitches, swimming pools, a rowing center), and by associations related to the sea and fishing. This system constitutes a filtering area between the city and the port terminal. In addition, the water canal constitutes a further device of separation, but above all of dialogue, offering a multiplicity of uses (Figure 6).

Although on a different level but again confirming the local need to overcome the city-port conflict, the community of Prà has already been the protagonist of a significant event linked to the *name* given to the port's container platform. As soon as it was built at the end of the twentieth century in the administrative territory of Prà, in fact, the terminal mistakenly took the name *Voltri Terminal Europa (VTE)* following a geographical and progressive denomination of the places, from the center towards the west. Following the expansions that transformed the coastline and the city's relationship with the sea over the years, the friction was echoed by the communities' demand for recognition of a specific identity linked to the port. In other words, the citizens of Prà, burdened by the large port infrastructure, demanded – if nothing else – to possess the port by giving it *their own name*.

Following several outreach activities organized by the local committees with the administrations¹⁴, in 2014, the problem of the terminal's geographical-territorial denomination was brought to the forefront, demanding a definitive change until an official decree of the Genoa Port Authority updated the name to *Prà Terminal Europa (PTE)*, causing a change in all the signage in the surrounding area.

¹³ PSA Genova Prà is the main container terminal in the Port of Genoa and the first in the Upper Tyrrhenian Sea. The company is part of the PSA International Group (Singapore) which handles up to 60 million teu per year in port terminals all over the world. The direct access to the open sea and the 600-mt evolution basin allow easy maneuverings of even the largest ships currently operating in Genoa, arriving and departing 24 hours a day. The Prà port basin extends over 98 hectares, divided into 6 modules, along a 1433 m quay with a maximum draught that allows mega container ships to dock. Starting this year, the terminal will be able to accommodate three ULCVs at the same time, including two ships of up to 20,000 teu capacity. Source: <https://www.portsofgenoa.com/it/porti/porti-pra/porti-psa-pra.html>

¹⁴ Among the most active citizens' associations in Prà is the FondAzione PRImA'vera, which was the first to conduct the participatory campaign related to the issue of the terminal's denomination. Source: <http://www.supratutto.it/>



Figure 6. Aerial view of PSA Genoa Prà terminal and the Prà village behind.
(Source: Port System Authority of the Western Ligurian Sea, 2012).

In the light of the complex relationship between the city and the port, the name issue may appear insignificant. However, it witnesses the character of these places accustomed to conflict and to struggle for independence; moreover, it refers to a much more deep-rooted discourse of possession and even legitimation. Naming places, in fact, is an act of orientation but even more of appropriation: it is spreading the word in space creating mental maps to which everyone refers. And perhaps, precisely against the disorientation generated by a port infrastructure, built from nothing on the urban border, certain places ask to belong, to be named and designed¹⁵.

The Dunes Urban Park as key study

The project under construction of the Dunes Urban Park of Genoa-Prà, hence, fits into this context in which the interface between the city and the port is considered in the vision of local administrations a place for experimentation and for shared projects. In addition, the Dunes project is part of a set of interventions that the Port Authority, the Region and the Municipality are carrying out to make the relationship between city and port increasingly sustainable.

These are green areas but also interventions on the port front for the maintenance and rearrangement of the access system to the operational areas of the port basin but, more importantly, for the electrification of the docks, an operation that would allow to significantly reduce not only the acoustic emissions in the atmosphere by switching off the engines of ships moored on the quay, as well as affecting the consumption of energy.

¹⁵ Cf. Moretti B. (2018) *Un colle, un transatlantico e un nome. Tre storie sul porto di Genova*. Sagep Editori, Genoa.

Furthermore, this stretch of coast is the site of new infrastructural projects¹⁶ between land and sea that will also involve neighboring delegations in the years to come, especially towards the east (Figure 7). Some of these projects, presented by the Municipality in 2021 and regarding the areas of Prà-Palmaro¹⁷, then, concern the urban reconversion of former railway areas along the Via Aurelia and the timely recovery of several residential architectural artifacts with the aim of creating a system of social and cultural centralities aligned along the coast.

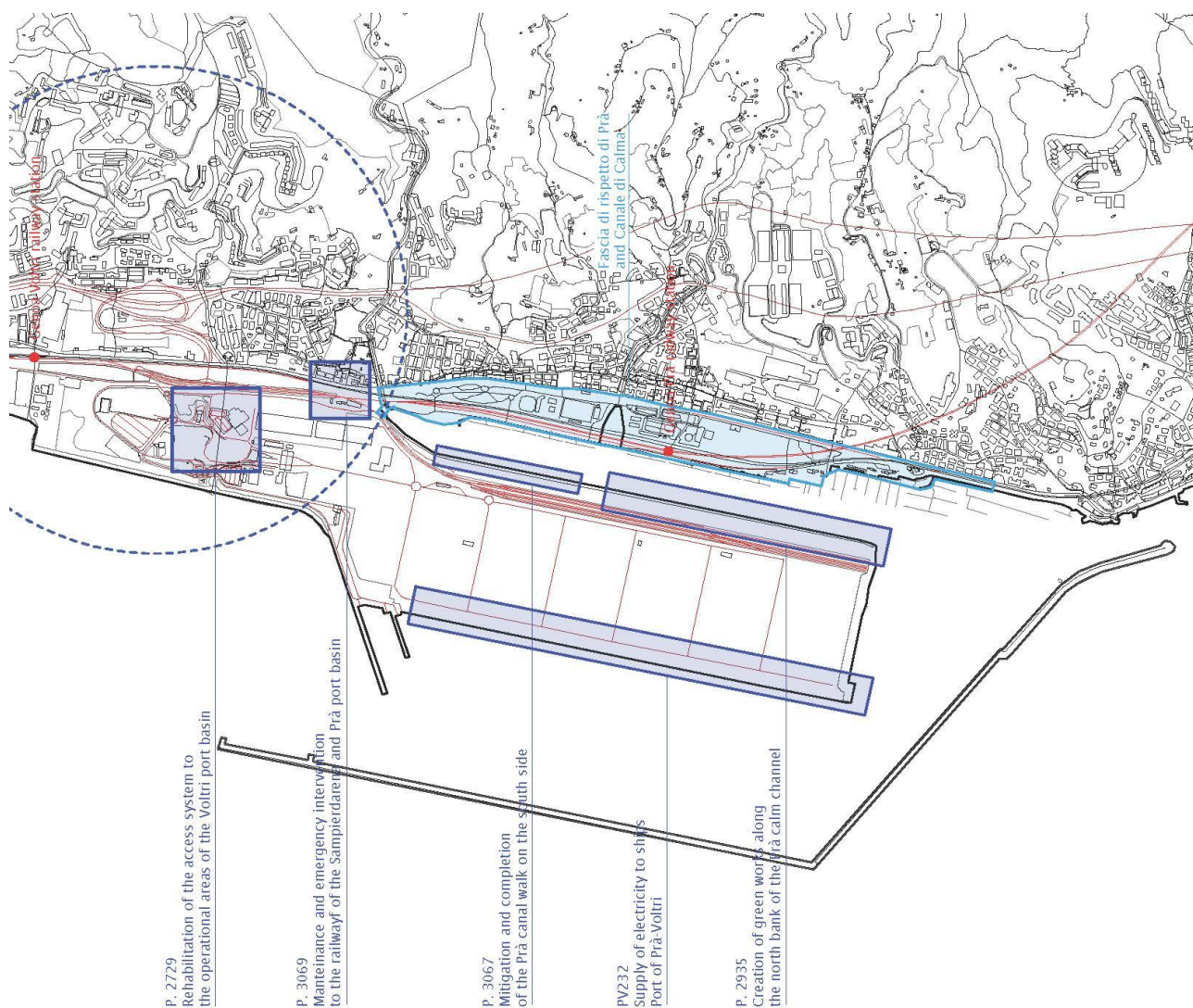


Figure 7. Map of the most recent city-port projects in the Port of Genoa-Prà, 2021.
(Graphic Elaboration: Beatrice Moretti).

Framed within the RUMBLE research project, the new Dunes Urban Park was born from the explicit intention of responding to a conflict and a social emergency with the elaboration of an urban project, capable of both controlling the problem of port noise and creating livable spaces for the city from which to continue observing the activity of the port. The Dunes Urban Park's project has the double aim of creating a "filter zone" between the port area and the city area by integrating the activities of the port into the urban context and, on the other hand, of acting as a "green stitch," a new border landscape which will contribute to further redevelop the delegation of the Genoese west.

¹⁶ For a detailed overview of the port infrastructural projects in the Port of Prà, see <https://www.portsofgenoa.com/it/strategia-sviluppo/mappa-di-geolocalizzazione-degli-interventi-infrastrutturali.html>

¹⁷ For a detailed overview of the projects for Prà-Palmaro, see <https://smart.comune.genova.it/comunicati-stampa-articoli/lavori-pubblici-presentato-il-progetto-la-rigenerazione-urbana-di-pra%E2%80%99>

The project for the linear park along the urban and port fronts had an initial phase linked to the creation of an initial dune system (Dune 1 phase) realized in 2013-2014. The Dune 2 phase, started in summer 2021 with a duration of almost a year and a work amount of 12 million euros, is the completion of an existent project aimed at an expansion with the construction of artificial dunes, between 10-15 meters high, in the last 950 m of the quay on the north bank of the port terminal.

According to the survey of noise sources and technical investigations carried out as part of RUMBLE, it is believed that the raising of the dunes can make a decisive contribution to shielding the noise. In addition to the continuation of the promenade, the project will include four squares developed according to different themes and uses; the last square, at the easternmost end of the terminal, has a 180-degree view towards the port (Figures 8, 9).



Figures 8, 9. First images of The Dunes Urban Park. (Source: Port System Authority of the Western Ligurian Sea, 2021).

The Park is created through a vast embankment of artificial dunes that will be modeled to form pedestrian paths, areas equipped for parking and entertainment. Subsequently, the insertion of volumes for services and the creation of areas for children's play is envisaged. The park will be developed through naturalistic engineering works, grassing and planting of trees and Mediterranean species, constituting the first Genoese example of the construction of an urban park on an artificial area that covers about 30,000 square meters. Particular attention will be paid to the issue of connections with the city and the water, providing two accesses to the quays of the navigable canal.

From the point of view of financing, it is interesting to note that - even though it is a project with a complete urban and public vocation - the intervention is included in the extraordinary programme of urgent investments for the recovery and development of the port (ex art 9bis, *Decreto Genova*,

Law No. 130/2018), confirming the contemporary attitude of the port to design and guide the transformation of strategic areas outside the traditional perimeter of its competence. Rather than a place to compensate the city for the damage caused by the port, the new Dunes Urban Park will be a public place from which to experience the port.

Conclusions

The Ecosystem Vision and the Cluster Concept

Here presented as a case of effective and strong port resilience practices' application, the Dunes Urban Park illustrates how the theme of the sustainability of port activities and, in particular, that of the decarbonization of the port system, are intimately linked to that of the interaction between the city and the port. It is thus the port's intervention towards or directly *on* the border it shares with the city that is crucial in this sense: as well as through actions based on urban green and public space, this also takes place through enhancement projects, in certain cases rationalization of the railway line also intertwined in the most consolidated and historical urban fabrics.

In terms of design, the Park shows a prevailing and multi-dimensional approach of *equipping the borders*, namely transforming them into infrastructural spaces or functional axes that work between the strips of contact between two or more territories. Thus, where the lack of space and morphological fragility are at their extreme, borders become physical devices capable of equipping areas between city and port, guaranteeing permeability, exchange, and transition. Such border projects, in the case of Genoa-Prà here illustrated or in other cases with analogous spatial and administrative conditions, intervenes on the territory at different scales – that of spaces, systems, services, flows, etc. – in order to improve the quality of the territory and favoring the regeneration of the city-port ecosystem *as a whole*.

Furthermore, the Dunes Urban Park describes a long and not easy path of dialogue with the territories. Since 2013-2014, with the first version of the park, this series of transformations have always had to deal with sensitive communities highly committed to achieve a full re-appropriation of the place having suffered, in their view, the imposition of a new and extraneous infrastructure as the port terminal in the late 1990s. With a long process of exchange, accompanied through the organization of working tables with the citizens and local committees with the municipalities, not only the relationship changed but the project was extensively altered: from a simple masking, or camouflaging, barrier to block noise propagation from the port areas, it became a project of urban regeneration capable of producing beneficial effects for communities. On this, it is worth mentioning that the Dunes Urban Park was possible thanks to an articulated process even in the administrative approval procedures between several actors because of all the competences involved, from environmental to security. Besides, the requirements arising from this dialogue have allowed the executive design to be refined.

The resilience port practice outlined by the case of Genoa-Prà enriches not only the catalogue of projects focused along the threshold between the city and the port, but also the scientific literature on the subject, bringing to the forefront the strategic dimension of the cluster in support of an increasingly eco-systemic vision of multi-scale relations between the city and the port.

As already mentioned, the realization of Dunes Urban Park is part of a transnational project involving two countries (Italy and France), three Italian regions (Liguria, Tuscany and Sardinia), twelve ports (Genoa, La Spezia, Vado Ligure, Bastia, Ile Russe, Portoferraio, Isola del Giglio, Piombino, Livorno, Olbia, Cagliari, Nice), three logistic platforms (Frizione and the port of Livorno, Porto Torres and Tolone), 6 funded projects on the theme of “noise and ports” including RUMBLE (MON ACUMEN, DECIBEL, LIST-PORT, REPORT, TRIPLO), eight institutional and territorial partners

(Regione Liguria, Office de Transports de la Corse, University of Genoa, Western Ligurian Sea Port System Authority, Northern Tyrrhenian Sea Port System Authority, University of Pisa, Sardinia Sea Port System Authority, Métropole Nice Côte d'Azur) (Figure 10).

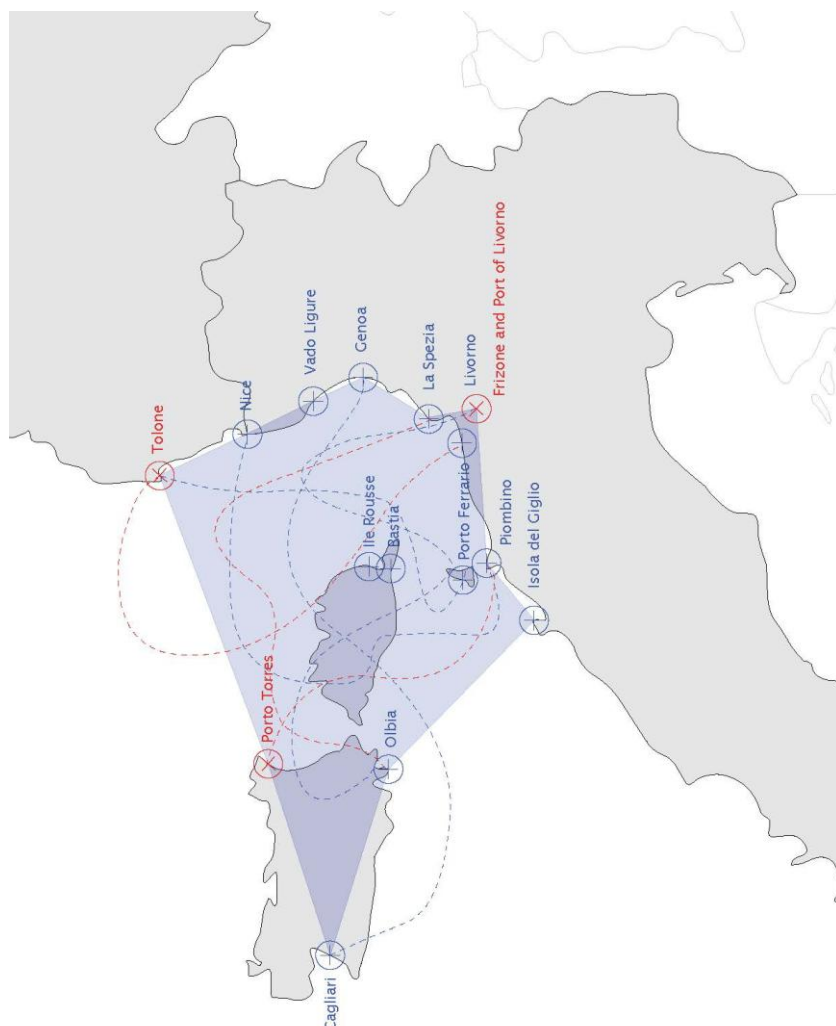


Figure 10. The INTERREG IT-FR "Maritime" Programme Structure, 12 ports (in blue) and 3 logistics platforms (in red), 2021. (Graphic Elaboration: Beatrice Moretti).

In this wide framework, new tactical and topical aspects emerge, such as the systemic management and the relational dimension introduced by the cluster concept. Widely used in the field of regional economics and geography,¹⁸ this concept refers to the genesis of new regional clusters, i.e. clusters of economy activities, firms and industries based on the port dynamic structure which contribute to the proliferation of new geographic patterns that increase the interregional competition and fill the shortcomings of traditional regional development models and policies.

Even if is a temporary institutional aggregation, the cross-border and multi-scale structure of the INTERREG IT-FR "Maritime" Programme project has the features to be potentially considered itself a cluster formation, due to the cooperative nature that it exhibits in the midst of the Mediterranean. According to Vorley, the cluster has become a highly interdisciplinary notion with a multiperspectival approach and, to take profit of its major assets, we must consider it «as a dynamics and metaphorical construct rather than as a scientifically analyzable concept *per se*.» (2008) In this sense, connecting territories on a large scale to address the same emergency – e.g. the acoustic impacts of ports on the environment – allows to exploit the cluster concept and,

¹⁸ Cf. Vorley T. (2008) The Geographic Cluster: A Historical Review, Geography Compass, Wiley Online Library.

above all, the spatial pervasiveness and relational strengths that it introduces into spaces and systems. If not properly a cluster – which is a very peculiar notion indeed, according especially to the geographic discipline – the structure of this complex project gives rise to undeniable, at least spatial, opportunities and challenges.

Through the optimization of resources and the rationalization of infrastructures and investments, in fact, the system of ports, cities and institutions illustrated above is producing a strong impact on the functioning and on the evolutionary structuring of territories both on a territorial and an urban scale. Last but not least, recurring and long-lasting challenges – such as the city-port conflict materialized here in acoustic impacts and noise pollution – highlight a common ground for the territories along the coasts. In this sense, again, the idea of a widespread but connected system of several ports, cities and infrastructures, as set out for instance by the recent 2016 Port Reform in Italy,¹⁹ puts all the components of the system to act as accelerators, by exploiting their complementary capabilities and the power of proximity.

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¹⁹ In Italy, the 2016 Port Reform has merged the 24 port authorities into 15 port system authorities. Reference is to the Legislative Decree No. 169 (August 4, 2016): “Riorganizzazione, razionalizzazione e semplificazione della disciplina concernente le Autorità Portuali di cui alla legge 28 gennaio 1994, n. 84”.

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