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An antifragile strategy for Rome post-Covid mobility

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Abstract

We are aware that we will have to live with COVID-19 at least until the vaccination of a minimum percentage of the population will guarantee the achievement of "herd immunity". Until then, it is proved that the most effective strategy to limit contagion is social distancing. Despite the adoption of countermeasures, this strategy is having heavy effects on the economy and social relations, putting the issue of people's mobility at the centre of attention (OECD, 2020a; Un-habitat, 2020). This moment must therefore represent the opportunity to build an urban resilience strategy around mobility policies based on necessary "anti-fragile" scenarios (Taleb, 2008; Blečić & Cecchini, 2016), seizing this phase for an urban and social transformation capable of strengthening the complex "city" system toward "a new normal" (OECD, 2020b). In some Italian and foreign cities, the partial reopening carried out from May 2020 led to the resumption of some productive activities. The consequent increase in the flows has given rise to a complex challenge related to the reorganization of mobility. Rome has put in place measures such as the strengthening of public transport during peak hours and the start of the construction of 150 km of cycle paths, already foreseen by the Sustainable Urban Mobility Plans (SUMP) of 2019. However, it falls behind cities like Milan and Bologna, who have drawn up specific documents such as Adaptation Strategies and Emergency Plans for Sustainable Mobility, promptly engaged in the reorganization of mobility following the example of other European cities (such as Barcelona, Paris, Vienna) that pursue clear objectives and long-standing strategies of environmental, social and economic sustainability. Nevertheless, the backwardness of Rome also deals with the complexity of the urban "form" of the city and its immeasurable extension, as well as to the paucity of municipal mobility policies of the last decades. In view of a "post-COVID" phase, two essential factors are overriding: the demand for travel (Who should move? From where to where? How?) and the supply of urban and metropolitan mobility. However, it is necessary to counter immediately the risk of an uncontrolled return to the use of private vehicles, which, for Rome in particular, would mean the collapse of the city, also related to an immediate increase in atmospheric pollution and roads accidents. The paper is aimed at proposing an anti-fragile strategy for Roman mobility, starting from the functional and morphological analysis of the Roman settlement system, related to its articulation and specificities, which constitute a fundamental component in evaluating the potential and weaknesses of new mobility scenarios, highlighting the relationships between forms of the city and mobility models.

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The proposal for a planning methodology, based on the identification of the "elementary urban units" of the "theoretical grid" (Vittorini, 1987; Cerasoli, 2008), is supported by the international debate and practices of the last decades (*Superillas* in Barcelona; 15-minutes city model; Good Moove Plan in Bruxelles) and by the arising temporary practices in the Covid-19 phase. A planning methodology that will be able to easily switch from emergency to ordinary, combining ordinary and post-COVID extraordinary funds.

1. Intro: COVID and mobility in large cities

Since exactly one year, COVID has changed our way of living.

This experience must force us to become aware of the need to change those cultural and socio-economic paradigms to which, in fact, we have accustomed in the past decades. Paradigms that have conditioned the "forms" of our cities and the ways of living them. First of all, the ways of moving.

Fig. 1. Rome, Historic Center without people and traffic. Via Cavour, 24 May 2020, 1.00 pm

Mobility in large cities has been strongly affected by the spread of the virus. In last months, many cities (as Paris, Barcelona, Milan, Bogotá) have faced the crisis and have adopted emergency mobility strategies, even implemented by simply tactical urbanism interventions, to also prevent a massive and unsustainable return to private transport when confinement measures would be reduced.

We are now projected into a post (post) COVID phase - that is, when, thanks to the vaccination campaign, we will be back to a "new" normality. In the post (post)-crisis, it will be necessary to seize the opportunity for an urban and social transformation capable of strengthening and rebalancing that "complex system" which is the City.

To this end, the paper is aimed at highlighting the relationships between forms of the city and mobility models (§1.2) and at illustrating the main ongoing practices of post-covid response to mobility issues (§2), in order to propose an anti-fragile strategy for Roman mobility (§3), involving the functional and morphological analysis of the Roman settlement system, related to its articulation and specificities, which constitute a fundamental component in evaluating the potential and weaknesses of new mobility scenarios.

1.1. Cultural and socio-economic paradigms (to change)

We know that since 2006 the world urban population exceeded the rural one and today is just over 55%.

This because during the Twentieth Century, pursuing perhaps arrogant development models, we left that entire populations were concentrated in urban areas with more and more extreme density.

Furthermore, we have allowed consume large territories with the phenomenon that in the Sixties was called "urban sprawl" or "suburbanization" or "urban region" (quoting Giancarlo De Carlo).

But, at the same time, we allowed the abandonment of entire territories (the so-called "inner areas") and, with them, all those activities historically linked to the territory and its care.

Although international treaties to combat climate change have followed one another since the Nineties, the growth of large urban areas continues without signs of stopping.

Cultural and socio-economic paradigms often based on an ephemeral consumerism that is causing an ever-greater production of solid but also increasingly social waste.

The senseless and irresponsible exploitation of natural resources to support this way of living is accompanied by the atmospheric pollution caused by the use of fossil fuels, necessary to move in increasingly dilated suburban contexts.

All this is producing more and more sensitive effects on the climate and on the defence capacity of our planet.

Now, the post (post) scenario COVID offer us the opportunity – that we cannot ignore – to change these unsustainable paradigms.

1.2. "Forms" of the city, ways to living, way to move

There are "socio-cultural" interrelations between City Form and Mobility Modes, which follow a very simple logic. The Compact City corresponds to a mobility based mainly on collective transport while to the Diffused City (the Suburb) mobility based on individual transport. In the middle is the soft mobility, suitable for both Cities - if made appropriately efficient and safe.
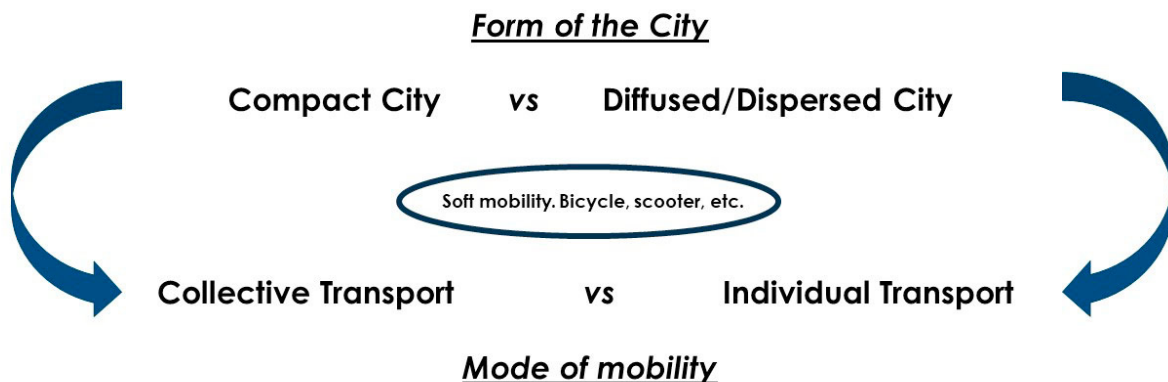

Fig. 2. Socio-cultural interrelationships between Mobility and Territory

Today four "forms" of city are recognizable in Rome: the Historic Centre, the Consolidated City, the Modernist City and the Diffused or Dispersed City. Each of them represents the synthesis between settlement models (ways of living) and mobility models (ways of move).

The effects of this settlement complexity in Rome, added to those deriving from the archaeological specificity of the city, resulting in a public transport that is not up to the needs and is also heavily penalized by a very high number of vehicles on the roads (1,758,578 cars, 612 per 1,000 inhabitants, 393,669 scooters, 137 scooters per 1,000 inhabitants).

And on the environmental side, the consequences are serious.

Therefore, today we can realize a structural change in mobility practices to improve the overall urban quality of cities.

2. Rome and the European experiences of post-covid mobility

In the emergency context, strategies and actions have been put in place to face the problems arising from the social distancing and pandemic containment measures (OECD, 2020a; Un-habitat, 2020; OECD, 2020b; Saatchian, 2021 Katrakazas, 2021).

In this perspective, the Italian National Institute of Urban Planning (INU), drew up a document in May 2020, focusing on the relevance of urban governance in this phase, suggesting guidelines to give an answer to the health, economic and social emergency (INU, 2020). Among the proposed interventions, the document points out the issues of accessibility, sustainable mobility, and the quality of public spaces. In fact, according to an opinion shared by various institutions, the lines of action of the new mobility strategy in the post-covid phase should converge, on the one hand, on the reorganization and strengthening of public transport and sustainable mobility infrastructures. On the other hand, a relevant issue is the reconfiguration of mobility spaces, including low-cost tactical urban planning practices characterized by temporary, extendable, and replicable uses of spaces and transport lines (Cerasoli, Ravagnan, 2020).

In this context, the strategies put in place by the Municipality of Rome have been developed to enhance individual zero-impact travel solutions through the spread of soft mobility and micro-mobility, also supported by national funds for the purchase of vehicles. In particular, the Administration has approved a new extraordinary plan of 150 km of "transitional" cycle paths in 2020, alongside the creation of new sharing services, the increase of bike racks in public places, the development of the plan for electric charging stations, and the strengthening of mobility management in Roman companies and schools.

The Cycle Plan is consistent with the SUMP (Sustainable Urban Mobility Plans) approved in 2019 and the Biciplan. The pandemic also represented an important phase for a *paradigm shift* towards intermodality, with particular reference to bike-friendly public transport (metro, regional trains, buses, and trams), which is very underdeveloped in the Italian context, and in particular in the Roman context.

In a more extensive, articulated, and effective way, some European cities have put in place emergency strategies, such as the city of Barcelona that within the ongoing planning process of the *Pla Director Urbanístic Metropolità* toward the final approval, has conducted a broad reflection, led by the Urban Policy Development Area of the AMB, which led to the drafting in July 2020 of a document "The PDU, the covid 19 and the healthy city"[2]. This document updates the Plan's choices even in the face of the new situation, focusing precisely on the issues of the "right density" and the sustainable mobility, which are the pillars of the city's recent and future transformations, starting from the model of the *Superilles*, taken up in the model of polycentric and sustainable development proposed by the Plan.

In fact, in the post-covid regeneration strategies, there is a convergence on regeneration models, which focus on the reorganization of mobility, on the construction of new "geographies of proximity", and on the valorization of public space taken away from cars and given back to the community. This is starting with Barcelona's *Superilles*, which have already been experimented in other Spanish contexts such as Victoria Gasteiz, or tactical urbanism and models such as the French *Ville du quart d'heure* (Moreno, 2020), which are increasingly becoming a guide for temporary interventions in the public spaces of some cities, as in the case of the "Piazze Aperte" project of the Municipality of Milan or the interventions in Bologna and Reggio Emilia for the safety of school accesses.

It seems useful to point out also some Italian cities for their programmatic approach to the emergency, in particular Milan, with the document "*Milano 2020. Strategia di adattamento*"[3], a document open to the city's contributions that provided a vision supported by strategies and actions. In particular, concerning the topic of "Public Space", the Municipality intends to regain the space for physical activity through a series of actions: adaptation of pavements to social distancing measures and identification of "protected" paths for the vulnerable groups of citizens, a temporary and widespread pedestrianization (Play Streets for children) in the neighborhoods

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[2] Available at: https://urbanisme.amb.cat/es/visions/pdu-covid-19-i-la-ciutat-saludable (accessed: 26/11/2020).
[3] Available at: https://www.comune.milano.it/aree-tematiche/partecipazione/milano-2020 (accessed: 26/11/2020).

with lacks of green spaces, the reconfiguration of traffic flows in parks, the adaptation, and extension of open spaces for commercial activities, including on parking areas. This topic also involves the use of public open spaces for cultural and sporting events, providing facilities, and simplification of procedures to allow organizers to comply with the criteria of public spacing and quotas without excessive costs. The document highlights for each theme some priority actions of immediate feasibility, i.e. for the topic "Public space" the "reactivation of parks, centers, and sports facilities", "Open squares in every neighborhood" and "open spaces for commercial activities and catering".

Furthermore, concerning the "Mobility" topic, the Municipality envisages a series of actions to decrease trips and diversify the mobility offer, acting on the mobility demand by favoring smart working and intervening on the city's timetables, improving and diversifying the mobility offer, in particular public transport and bicycles, scooters, sharing, individual public transport, introducing restrictions for the presence on public transport and fostering walking by implementing *30 km/h zones*, establishing residential streets and developing tactical urban planning projects. In addition, the introduction of innovative methods of access to the different mobility services is planned, by integrating LPT and other systems (Mobility as a Service model) which flexibly facilitate individual travel planning. Concerning this topic, the priorities are those related to public transport quota, mobility measures (updating rules on traffic and parking policies), the promotion of the *Strade Aperte* (open roads), and the widespread cycling program.
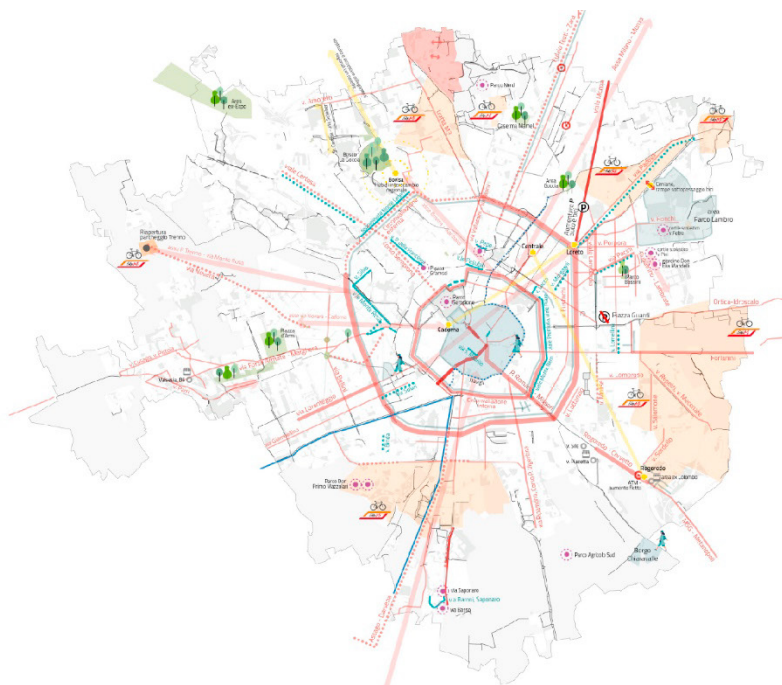

Fig. 3. Milan, *Milan 2020. Adaptation strategies – Citizens' proposal*

On the other hand, the Municipality of Bologna has drawn up the *Piano per la mobilità ciclabile emergenziale* and and the *Piano della pedonalità emergenziale*, containing all the measures to overcome the public transport crisis, clearly aware that the city cannot afford to take a step backward in the fight against pollution and car use. Within the *Piano per la mobilità ciclabile emergenziale*, the Municipality of Bologna clarifies that "the adoption of appropriate corrective measures is necessary to allow an orderly restart of the mobility system, to enable an adequate physical distance between people by re-configuring spaces and modes of travel, but intending to grasp relevant additional benefits, i.e. the reduction of pollution, the strengthening of proximity mobility and local networks, as well as the increase of quality and quantity of widespread public spaces". The fields of action have been identified, distinguishing the different components of mobility, which should not be treated separately but in an integrated manner, in order to present users with a wide range of alternatives to the choice of private transport. The main themes of the strategy are the "relaunch of public transport" to boost demand, the "limitation of journeys at peak

times", spreading them throughout the day with the collaboration of the area Mobility Managers with the institutions, in agreement with companies and schools, traffic regulation measures, emphasizing that during "phase 1" there was no suspension of traffic regulation measures, unlike in many other Italian cities, the "acceleration of the spread of active mobility", by means of infrastructural interventions and incentive policies and the "enhancement of other types of mobility". Based on these contents, the Plan envisages many structuring interventions, defining the Ways of Intervention, the Design, the Implementation, and the Guidelines for Intervention.

Finally, the City of Turin has drawn up the *"Grande Piano per la mobilità – Fase 2"*, designed to reshape mobility based on new needs and protect collective health, avoiding a massive return to the car and thus pollution and congestion. The adopted strategies refer to a collaboration with the government and other bodies, the reduction, and redistribution of urban mobility and urban space in favor of sustainable, shared, and electric mobility, adapting local public transport standards to the new covid-19 regulations, monitoring these interventions, traffic levels, congestion, and modal shift.

For these cities, as well as for other Italian and European cities, that have undertaken emergency measures related to mobility, the experimentation has focused on three common lines of interventions. The first concerns private and public transport, i.e. the management of LTZs and paid parking and the quota of LPT. The second concerns pedestrian and bicycle mobility, which have taken on a major role in daily mobility, leading to more or less temporary interventions, linked in some cases to planned interventions and in others to new ones linked to emergencies (Lock, 2020). The third involves the new alternative means of transport, such as electric scooters, electric bicycles, as well as the funding policies for their purchase and use (starting with the MIT decree for the "*bonus mobilità*") (Amato, Cerasoli, 2020).

3. Rome: an antifragile hypotesis for a "new" grammar for the Roman mobility

As pointed out through the main ongoing practices in European cities, it is possible to address the post (post) COVID scenarios, counteracting the return to the (ab)use of private vehicles, which would have negative effects on air pollution and road accidents facing the complexity of the urban forms and flows.

The current high levels of smart working and e-learning in schools and universities must not represent a temporary contingency, indispensable only for the management of COVID, but turn in an opportunity for a – also cultural - revision of mobility practices, reducing the plethora of unnecessary trips and, at the same time, encouraging all forms of sustainable mobility.

Thus passing from the emergency to the normality of long-term scenarios.

In this phase, we can build an urban resilience strategy around mobility policies based on "anti-fragile" scenarios (Thaleb, 2007; Blecic & Cecchini; 2016). This will change the usage maps of our cities. And the task that urban planning and city government today must take on is to identify the appropriate strategies to manage this transition.

To face the post-Covid challenges, it is essential to put in place an overall strategy for Roman mobility, which can be easily transformed from emergency into ordinary, using ordinary and extraordinary financial resources for post-COVID.

The following proposed hypothesis is the result of a joint research between Roma Tre University and Sapienza University, in part already anticipated at the beginning of May 2020 (Cerasoli & Ravagnan, 2020).

The main lines of action of an anti-fragile strategy for post (post) Covid mobility in Rome are the reorganization and strengthening of public transport and infrastructures for sustainable mobility and the reorganization of mobility spaces.

As for the reorganization of the "hierarchy" of the mobility, the most qualified reference is the Barcelona experience.

Pedestrian mobility must represent the primary form of mobility in the city, to be privileged and guaranteed, given the rediscovered value of "proximity".

Soft mobility (bicycles, scooters, etc.) can and must represent the main alternative, especially in the most sprawled parts of the city, thanks to the use of spaces previously dedicated to the transit and parking of private vehicles.

Local public transport (buses, trolleybuses, trams; subways, regional railways) and taxis must catalyze medium and long-distance trips, between different neighborhoods or from municipalities in the metropolitan area or the rest of the region. A dense network of public transport "corridors" will therefore have to be designed.

Taxis and car-sharing will complete the public transport offer, also thanks to a redefinition of fare policies.

The use of private cars will thus be progressively limited according to the areas of the city and to concentric circles starting from the historic center to the farthest areas of the city, where instead it will have to provide the necessary support for public transport.

In relation to the "forms" of settlement in Rome, the declination of the modes of mobility will be the following.

The Historic Centre, in which all urban functions coexist and integrate, must become the City to Walk, where everything can be reached by walking and where the pedestrian must be protected, bicycle encouraged, public transport well organized and cars progressively excluded.

In the Consolidated city, characterized by a rich variety of functions and services and by the regular road network, we must apply an "urban grammar", schematized in the "theoretical grid" (from an intuition of Marcello Vittorini in 1987). Grammar which we have been experimenting and perfecting ever since in the Department of Architecture of the Roma Tre University.
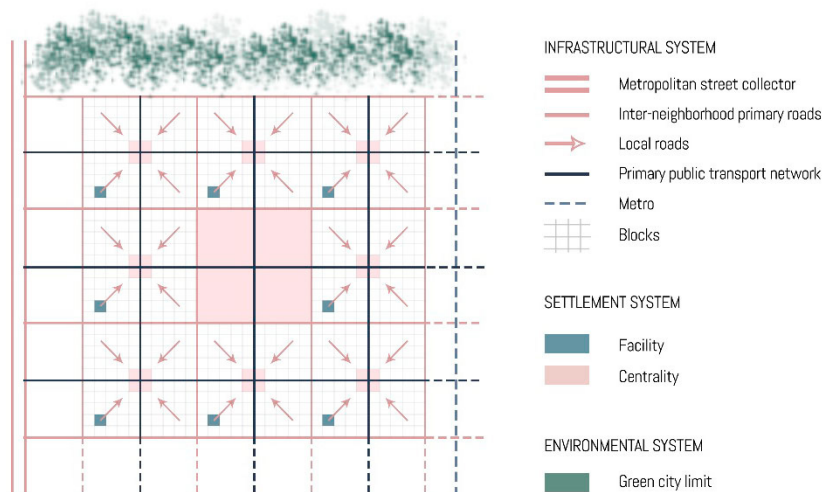

Fig. 4. The "Theoretical Grid" Scheme

The logic behind the "theoretical grid" is the functional and morphological division into two mobility systems (primary collective mobility and complementary individual mobility), minimizing interference between the two systems.

Based on the preliminary delimitation of "urban rooms" (the "elementary urban units", corresponding to neighborhoods), the "grammar" identifies the primary network of public transport and soft mobility that crosses the various elementary urban units thanks to a network of "protected corridors", connecting the nuclei of the different "urban rooms" and giving shape to the system of central places.

It then identifies the network for complementary individual mobility, which is based on a "fluid" roads system that flows outside the "urban rooms", within which "zones 30" (or even 15) are identified to safeguard the pedestrian and bicycle mobility and to maintain acceptable levels of atmospheric and noise pollution.

In the Modernist City, characterized by dilated distances and often unnecessarily intricated roads, the combination of soft mobility and public transport - on which bicycles, scooters, etc. will be able to travel all the time - must represent the great alternative to using the car. By applying the same criteria of the "theoretical grid" to this part of the city as well, it will be necessary to identify protected routes for bicycles that must intercept the "corridors" of public transport - such as to guarantee trips lasting no more than 15 minutes.

In the Peripheral urban fringes, in the vast suburbs surrounding the city, thanks to the application of the "theoretical grid", it will be possible to rationalize the circulation of private cars, identifying the complementary network of "fluid" roads. To reduce the direct flows of cars to the city centre, it will be necessary to identify some public transport "corridors", which guarantee an effective increase of accessibility to the "central places" of the peripheral districts, while strengthening intermodality through the creation of interchange nodes between cars, metropolitan railway lines, and the public transport network carried out by buses.

In conclusion, together with the use of new ICT applications, the adoption of reduced fares for public transport, incentives for the purchase of ecological means of transport, policies to raise awareness of the use of public transport, and the reduction of the use of the private car, it will finally be possible to restore to sustainable mobility the credibility necessary to achieve the ecological transition in the post (post) Covid phase.

Also in Rome.

In this perspective, Rome is representing an interesting and challenging field of experimentation for the "theoretical grid", with reference to the complex articulation of the different settlements forms and mobility systems. Nevertheless, the specificity of the urban structures and the functional organizations suggest possible variations for the implementation in other contexts of an anti-fragile grammar for urban mobility, between general constraints of sustainability and projects open to local features and challenges.

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