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Institutional and Non-Institutional Governance Initiatives in Urban Transport Planning: The Paradigmatic Case of the Post-Collapse of the Morandi Bridge in Genoa

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Abstract: The relationship between the institutional (established in law) and non-institutional initiatives (not supported by law) that improve the public transport system is currently a debated topic. The purpose of this paper is to identify the most relevant aspects of this relationship during an emergency event, namely the paradigmatic case study of the collapse of the Morandi Bridge in Genoa, which occurred in August 2018. The investigation, according to a consistent methodology widely used in the literature, is made up of a selection of interviews with professional figures particularly involved in institutional structures, drawing on qualitative results, and compared with official statistics. The events that occurred in Genoa, during the phase of reorganization of the urban transport service and the circulation in the city, underlined how the response of citizenship is a crucial element, including from the governance point of view. Analytic and observational findings reveal that non-institutional initiatives smooth major criticalities where formal institutions can only produce sub-optimal transport solutions (because of the limited means they own by virtue of the moment of emergency), providing evidence that the two modes of governance are absolutely complementary.

Keywords: public transport; urban mobility; institutions; citizenship; catastrophic event

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1. Introduction

One of the crucial factors of cities that want to compete at an international level is the efficiency of the public transport system [1–4]). Literature identifies several critical points in the urban mobility sphere where sub-optimal transport solutions were being delivered and where better collaborations are expected in order to set up new measures and policies that consistently change operative planning [5,6]. In the transport field, a large amount of reforms took place in the past decades, re-formulating scales, competencies, and governmental bodies that are expected to oversee the modernization process and monitoring indicators of performance. Consider the new Sustainable Urban Mobility Plan recommended by European Commission (SUMP Guidelines, updated 2019) and the institution of metropolitan areas all over Europe, thought with a specific jurisdiction on the commuting systems. Nevertheless, authors are still debating whether institutional changes have had a beneficial or adverse effect, and whether any of the current structures provide a more effective framework for policy development and implementation [7,8]. The results suggest that, although the reforms show a broadly common set of shareable objectives, there are differences in devolved responsibilities and in policy options within the control of the bodies charged with implementation. Moreover, the existence of several tiers of government, coupled with the many interactions required, is adding transactional barriers and impeding the actual realization of the most effective measures for cutting congestion and increasing efficiency. On the other hand, meaningful cases of non-institutional-change-driven initiatives are developing, sometimes emerging as crucial contributions to critical situations, bypassing institutional barriers [9], but also bringing out latent resources still lasting among citizens [10]. In order to provide a clear distinction between "institutions"

and not, the paper refers to the categories mentioned in North (1990), which attributes responsibility for the formal "rules of the game" to institutional bodies. At the same time, the author does not consider forms of "social embedding institutionalism" [11] to be for non-institutional organisms: even if institutions also shape social life, non-institutional actors here taken into account evidently do not belong to those who have the innovation capacity attributable to formal institutions.

Within this frame, the purpose of the paper is to analyze the overall response of the metropolitan transport system in the event of the catastrophic fall of the Morandi Viaduct in Polcevera Valley, which divided the conurbation of Genoa in two, also affecting the entire national and supranational highways system [12,13]. Here, institutional and non-institutional actions were put in place in order to overcome the emergency status, becoming an incomparable opportunity of observation of formal and informal initiatives in the field of daily commuting and goods delivery service. In this way, the paper adds to actual knowledge by considering a paradigmatic example of how the informal crucially works to support the formal in the operation and improvement of transportation assets.

For this purpose, Section 2 is devoted to the deepening of the major sector trends in the current literature, specifically focusing on the progress in (lacking) coordination and collaboration between institutional and non-institutional transport planning actions. Then, the third section is devoted to the narration of the decisions and the facts that were observed in the post-collapse phase, when the municipality (in its governmental role) and overall citizenship started to face the challenge of a daily commuting and a transit system that had drastically fallen. The methodology of interviews with key actors in the public transport decision-making process (selected as having exerted a strong impact on the successful management of the emergency situation) is also explained there. Interviewees describe the collaborative process towards shared goals where decision-makers, local stakeholders, and people surprisingly discovered mutual benefits. Reflections and remarks derived from the interviews are reported in the fifth section, accompanied by a verification conducted on the official written documentation referring to the post-emergency phase (laws and regulatory plans, customer satisfaction reports, urban and port traffic statistics, social media usage) in order to compare what was said by the interviewees with the data that were actually recorded. Finally, conclusions underline how non-institutional initiatives are crucial to smooth critical events where formal institutions can only produce sub-optimal transport solutions because of the limited means they own by virtue of the moment of emergency. In this particular case, the evidence shows that the two modes to cope with transport system failure are absolutely complementary and the synergy between the two was considered a successful element in the planning process.

2. Literature Review: Institutional and Non-Institutional Bodies in the Transport Field

The correct relationship between institutional and non-institutional contributions in the implementation of transport planning solutions was proposed by Marsden and Groer (2016). Authors sustain that although formal structures always matter, the broader governance environment in which they stay is crucial as well. The nature of such a complex phenomenon as transportation requires increasing coordination and organizational interplay, which involves both formal and informal organisms, in a highly citizens-oriented perspective: deeper insights are needed for investigating the process by which informal institutions can emerge and the way such spontaneous involvement functions in practice. On the one hand, the identification of essential factors in this relationship is not treated in literature with a systematic approach; on the other, a vast production insists on institutional structures' definitions (which clearly lies beyond the scope of this paper). For a better explanation of the dynamics that the paper refers to, according to Jessop (2001), the "institutional turn" here analyzed is that where both the structural and the strategic dimensions of institutions are taken into account.

Nevertheless, going deeper into the affirmations presented in the current literature, the clear separation between the two categories is often toned down due to a wider observation

in practice. It is, in fact, surely accepted that the dynamics of governance practices are products of a complex interplay of formal and informal relations [14].

There could be several rationales of such a change in perceiving the role of informal bottom-up initiatives in the transport field: the general *devolution* process in administrative governance [15,16] also substantially affected transportation and the process of policy transfer follows two parallel directions: the downscaling of competencies, getting them closer and closer to the local level, and the aggregation of traffic basins as far as they constitute a larger area governed by a unique power. In this frame, a vertical subsidiarity is needed for compensating for a huge distance between the rulers and the ruled. Sometimes, austerity economic policies and spending reviews were responsible for forcing organisms of different levels to cooperate and to pull resources out of the enlarged community through interaction between actors, even though there is no evidence of significant results [17,18]. Finally, multilevel governance and metagovernance, as sustained respectively by Bache and Bartle [19], among others, and by Jessop [20], were outlined as crucial factors in understanding the current status of institutions and civil society [21].

In a wider perspective, the rapidly changing moment in the facts of governance architecture, largely depicted by Brenner [22] and Cassese [23], in which separatist forces, increasing nationalism, reinforced economies of scale, and supranational entities legitimacy co-exist, makes the need for the involvement of informal representations even more evident. In an era of scarce legitimacy concerning institutions [24], particularly in administrative processes, an acknowledgement of the interdependence of statutory and informal instruments is required. Mäntysalo et al. [25] also advance the necessity to develop planning methods for their mutual complementarity—thus avoiding the detachment of informal from a parallel planning "system". This exigence is also underlined by Patti [26], but in a wider scope: she refers to the process of building up new metropolitan structures in cases of a magmatic situation from the political point of view and she warns about how, without such a type of bottom-up initiatives, actions that are only institutional could endanger, basically, social cohesion. Generally speaking, the engagement of stakeholders is widely sustained in order to secure sustainable results in a long-lasting planning process, as reported in Neuvoven and Ache [27].

Assuming that institutional and non-institutional forms of intervention can be seen as two faces of the same response, it is necessary to add that this complementarity is currently allowed and made more massively available thanks to the use of interconnectivity as a pivotal aspect of the innovation systems, which also involve administrations and not only enterprises or big companies [28].

In this sense, the author considers it crucial to briefly recall here some factors that characterize the evolution of the transport system at an international level and that proved essential in the response of the Genoese community to the emergency caused by the collapse of the bridge.

Concerning current trends in the mobility sphere, the role of information and communication technologies (ICTs) as a key enabler is well recognized. In fact, taking into account the consolidation of the multimodal transfer of passengers and goods, one of the major constraints could become the lack of effective and efficient information connectivity among and between various modes (water, air, road, and rail). However, Harris et al. [29] found that recent developments in the field of ICT such as cloud computing, social networking, and wireless communication have further revolutionized the ways in which information is shared and supply chains are structured. Consequently, the attitude towards public mobility has changed, too: having more opportunity to plan trips, commuters today consider the public transport system more user-friendly and therefore more socially acceptable and almost engaging.

As the advent of real-time traffic streaming offers users the opportunity to visualize current traffic conditions and congestion information, static data from event providers (e.g., planned road works together with dynamically emerging events such as traffic accidents, localized weather conditions, or unplanned obstructions) are captured through

social media to provide users real-time feedback to highlight the causes of traffic congestion. This is an extraordinary novelty in perceiving urban life. Before, conventional traffic congestion estimation's approaches required the deployment of traffic sensors or large-scale probe vehicles, but the high cost of deploying and maintaining this equipment largely limited its spatial-temporal coverage. An alternative solution with a lower cost and wider spatial coverage was identified in exploring traffic related information directly from social media [30,31].

Though applications, social media, and other web networks have long been developed for statistics surveys, their use can be further updated considering actual changes. Aware that the evaluation of the use of social media in transport is at an embryonic research phase, some authors already used them to discovering people's thoughts about carsharing, bike-sharing, or electric vehicles to verify the real potential of urban policies. Gal-Tzur et al. [32] recognize how the recent upsurge in the web and in applications offers the opportunity for dynamic information flows: capturing the views, needs, and experiences of the traveling public in a timely and direct fashion through social media text posts. However, there is little published research on how to make the sector realize this opportunity of capturing and analyzing the text data. The literature agrees that the use of information in the transport sector has some unique features that stem from both day-to-day operational practices and the longer-term decision-making processes surrounding the transport system, especially in text mining exploiting Twitter, for example.

Research findings indicate how important the potential of social media for future applications exploitable by transport operators and authorities is in producing a more effective network of communication with passengers. A meaningful example was the 2014 Commonwealth Games in Glasgow [33]. From this point on, receiving and consulting traffic data as an information offered by operators in real time became a habit, strictly connected with the urban mobility conception. In addition, capturing information and then creating a circular relationship between data designing and building suggests how these technologies can lead to more realistic and updated outcomes in urban planning. Such new cooperative mobility models are crucial from several points of view (social, environmental, economic, political). By using "collective intelligence" technologies, the majority of the city's assets can be connected to one another, making them more readily observable, and consequently, easier to monitor and manage. The use of GPS and smartphones gives us the ability to send our data and automatically to return the view of the urban network status in real time. Moreover, this actual image is perceived as a help for people in understanding the city, finding their way, and recalling the city, because the quality of the city image affects individuals' abilities in wayfinding, as Negin [34] shows. Therefore, the availability of the updated maps offers citizens the possibility of being aware of what is happening around the area and what would be the best choice to make for traveling. The offer of data also gives access to applications particularly targeted for travel purposes, which recently emerged. Gebresselassie and Sanchez [35] carried out a review of 60 transport apps, also showing how they respond to equity and inclusion issues. They concerned ridesharing, support for disability, carpooling, and in some cases they were specifically addressed to categories of users. However, it appears to be consolidated that the rise of socio-technological innovations (in which institutions have a leader role, as specified in Geels, [36]) may durably reconfigure physical mobility systems towards greater sustainability. They may significantly increase the efficiency of existing systems and make alternatives to the usage of fossil fuel-powered private cars—from cycling, traditional urban rail, and bus rapid transit to public bike share schemes and 'free-floating' car sharing schemes—much more appealing and convenient. In fact, the latest finding in this field, i.e., the concept of mobility as a service, as the MAAS paradigm (Mobility As A Service) taught, favors this positive engagement of travelers. In fact, while several initiatives around transport services that are already promoted are isolated and siloed, MAAS provides the integration of various forms of transport services into a single mobility account, accessible on demand. Standing et al. [37] are very clear in sustaining that the impact of sharing on transport is

likely to be a part of the solution to transport problems and congestion. The use of these new ways of mobility during extreme events makes us better understand their importance and allows us to see their practical applications and to learn new lessons for the future. In particular, they showed their contributions in the famous event described below.

3. Materials and Methods

The collapse of the Morandi bridge on 14 August 2018, as well as being a dramatic event for the loss of 43 people who died crossing the highway along the viaduct, was an event rich in meaning for the Genoese reality. In addition to being an individual and collective pain for inhabitants and visitors, workers, and tourists, Italians and foreigners, it represented a unique moment of reflection for the community [38].Citizenship witnessed, in these days, a quite irresistible show of solidarity and sharing: the rescuers, law enforcement, and the volunteers. Within the spontaneous movement of collaboration and unity, important institutional as well as non-institutional interventions can be pinpointed in this event. The elements, reported below, show, at the same time, a solid institutional character but it is clear that their winning nature and the triggering cause was not being covered by law.

The bridge that connected Genoa (and its port) with the world suddenly divided the conurbation, the region, and the nation in its international relationships (passengers and goods) and urged them to rethink the entire network: how to let people be able to move away, how to make those inside move.

From the first day after (which coincides with the massive return from summer vacation), the municipality decided not to ban circulation in private vehicles, but to load public transport with added services, counting on the ability of people to make a responsible choice. The response was great. In one day, the number of entries the subway went from 15,000 to 45,000; in the morning and evening hours, four new railway journeys for commuting—free of charge—were inserted. In just 20 days, 1500 accesses to a car-pooling application were registered (whose availability to Genoa citizens was allowed for free by a private company), organizing fleets. There were 2500 shared trips.

The system as a whole held up unexpectedly. The effort of the 'men on the road' was incredible: 24 h a day there were policemen or workers building completions for alternative infrastructures. Surprisingly, people's response was noticed not only in planning travel, but also in driving behavior: aware of the inconvenience, the order with which drivers stuck to the indications of the police made the difference. The nominal capacity normally attributed to road arches was overcome by the test; such a synergy between the infrastructure and the user had never been seen before. The relevant initiatives did not end: port operators reached an agreement and quickly gave their willingness to allocate part of their concessional lands for the opening of a new road called "Superba" (epithet of the ancient Genoa), specific for goods, adjacent to the port. Such an oligarchic and competitive sphere left the traditional mental schemes to affirm an evident common superior good.

Several forms of solidarity completed the frame: from the rivieras, to the west and east of Genoa; from the associations, by the groups, by the companies, even though so severely tested by environmental disasters shortly after the collapse of the bridge; meals and supplies arrived (for free); cranes and excavators arrived to remove rubble and clear the roadway under the bridge. In addition, some Genoese citizens accepted the mayor's call for those who were able to host displaced people: 130 families immediately welcomed those in difficulty into their homes. Although not directly related to mobility, all this contributed in an exceptional way to a different perception of the community, brought out from appearances and anonymity. Amin [39] redefined, in 2006, a "good city as an expanding habit of solidarity and as a practical but unsettled achievement, constantly building on experiments through which difference and multiplicity can be mobilized for common gain and against harm and want". This is an absolutely adequate description of what happened.

A question that may arise is how to place the Genoese example within other similar cases or structured research in the field. For this reason, how and where the post-collapse experience can be significant must be framed.

Many sources argue about solidarity in cities theoretically and by means of case studies. One of them is Cesafsky [40], who deepens the theme of "infrastructural solidarity", very important for the event in question. Cesafsky laid the foundation for her reasoning, specifying that the equation between connective infrastructure and social cohesion is part of a city-building discourse, which has been thronging in the background of urban theories for a long time. Following the paradigm offered by Latour and the ANT (Actor-Network Theory), the scholar stressed how infrastructure can be seen as dynamic connections of people, things, and processes but not in a materialistic way, because physical networks are not able, alone, to recreate social cohesion, as politicians' slogans often promote. As Lynch also affirmed, transportation systems concern channels, surfaces, and other physical objects as they appear on a map: to charge them with a set of political meanings is a formula that planning theorists have already viewed in the past. From Howard to Le Corbusier, similar reasonings still last today and problems around the fragmentation in the city (not only from the geographical point of view, but as an inequality issue) allow them to be pulled out again. It is not in the scope of this paper to address this matter. Furthermore, Brenner [41] spoke about it in a very decisive way. Nevertheless, what is crucial for the author to underline is how the case of the Morandi bridge here illustrated does not intend to endorse any of these theories, nor to add considerations to this ongoing debate (at the same time, without naively ignoring them). The intention is, instead, to observe what happened beyond the rhetoric that often takes place around the construction of infrastructure, which instead has, in its essentiality, both characteristics of materiality and civil meaning. In the observation of the post-event phase and in the interviews devoted to delving into the case, how the novel infrastructure was born in the context of a new way of seeing the same existing community and not, primarily, as a remedy, built up in abstract, to a fragmented city transparently emerges. What is at stake in the relevance of the Morandi Bridge case is the citizenship response after the collapse and its direct implications on the transport system in the following days.

In terms of methodology, according to what the work by Rye et al. [6] sustains for similar cases of investigation, the present paper is based on a qualitative case study methodology, which can be considered appropriate when the studied phenomenon cannot be separated from its context [42]. In these kinds of research, case studies are also an appropriate methodology for knowing how the context acts and reacts, in view of the precise facts that are not simply replicable. Moreover, if the main objective of the paper is not to draw out systematic and theoretical assumptions from a single case, it is not invalid to consider only selected events and, particularly, such a unique event like that in question [6]. When a scientific work proposes a case study, it can clearly be framed more as a 'learning moment' that comes from experience, than a theory to be demonstrated. Because of the type of paper, an analytical apparatus that supports the experience's description is needed, appropriate to the case in question. As already done in numerous works, here, this support is provided by interviews and by comparison with actual plans, according to a consistent methodology widely used in the literature [43–46].

The paper traces the facts and proposes a key to their interpretation, but in some ways does not want to draw considerations of absolute value, this is already explained throughout the paper. In this sense, the conclusions are not the celebrated success of some targets, they are pulling the strings of a learning path from experience. This does not mean that there cannot be interesting elements under multiple facets, especially in governance and planning practices. These elements are in fact discussed in the discussion section.

The focus that makes Genoa actually strategic (and phenomena associated to transportation after the fall) is the investigation of how informal institutions—generated on a voluntary basis—contribute to smooth critical peaks and how the interplay with formal

institutions effectively worked in order to confront the emergency in public transport re-organization.

From Jessop (2001), we learned that institutions are "complex emergent phenomena, whose reproduction is incomplete, provisional, and unstable, and which coevolve with a range of other complex emergent phenomena". Therefore, from the analysis of the case study, the author identifies the most relevant aspects, which, once consciously recognized as such, contributed to the evolution of relations between institutions (formal and not), also in the long term, in the public transport realm. This is crucial because, as often happens, while the procedures established by law are manifest and traced, in the case of informal collaborations or initiatives undertaken by citizens, they, by nature, do not leave a trace except in people's experiences. From then, a new modus operandi could arise, which, without the facts of what really happened, could not be satisfactorily explained. This is also important from a governance point of view. In fact, where there is a strong institutional organization to oversee some specific performance of efficiency (e.g., public transport service), the role of non-institutional initiatives focuses on creating new best practices, recognizable as innovative elements in the governance of the future. It can be said that where there is an institutional top-down response, the usefulness of the bottom-up one is above all in the creation of praxis, which, once it comes to light, can become the object of specific policies tomorrow.

As far as the methodology of interviews is concerned, they are often used in transport surveys [47], sometimes in order to ascertain the reasons for driving, to identify typologies of drivers and modes, or to select a sample for additional analysis. In this paper, the interviews started from a structure of four questions, similar to a semi-structured type, but, due to the variety of the dialogue's issues, they can be better associated with in-depth interviews [48,49]. In-depth interviews, as a qualitative data collection method, offer the opportunity to capture rich, descriptive data about how people think and behave, and to unfold complex processes [50,51]. They can be used as a standalone research method or as part of a multi-method design, depending on the needs of the research. In-depth interviews are normally carried out face to face so that a connection can be created with respondents. The interview is normally conducted using a discussion guide which facilitates flushing out the respondent's views through open-ended questioning. In particular, in-depth, qualitative interviews are excellent tools to use in planning and evaluating programs, because they allow the interviewer to deeply explore the respondent's feelings and perspectives on a subject. Furthermore, in the interview, the personal material in the interviewee's possession can be discussed and this can bring further enrichment compared to what came to the interviewer's knowledge. Whereas the interviewee was chosen as a witness to the events that had taken place, what is in his possession constitutes very useful 'first-hand' information for the return of a general framework that would be impossible to trace with only official documents. A qualitative interview can be used, in fact, to facilitate the categorization and the development of relationships among concepts, which provided an interactive framework for investigating phenomena. This analytical process, as sustained by Strauss and Corbin [52], was further iteratively refined throughout a systematic comparison between the concepts and patterns previously identified through interviews and official data (see paragraph 5), in order to gain more insight and enhance understanding of the phenomenon under study. In Figure 1, the questions are reported.

The in-depth interviews were submitted to nine persons. They were digitally recorded and fully transcribed. Interviewees were selected via personal contacts or personal recommendation. Informed consent was dealt with by verbal agreement with the interviewees, confirming that anonymity would be maintained, and by giving them the opportunity to read and comment on a summary of the interview findings. Care was taken to base conclusions on factual information regarding events that took place based on written documentation rather than individual opinion. The author recognizes that the number of interviews is small but, wanting to interview key people in the decision-making process of the transport system and wanting to make use of strategic observers for the purpose of the

paper, the number of people involved could not have been high. Moreover, the analysis in the paper deals with documented institutional changes, therefore more interviewees would not necessarily strengthen the analysis.

INTERVIEW SCHEME				
INTRODUCTION	QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4
You are a citizen and involved, in various capacities, in the organization of the city reality. The collapse of the Morandi Bridge certainly involved the energies of all those who deal with the transport sector in this city for many months. With a retrospective look, we ask you:	Your structure has certainly implemented **measures** regarding the emergency situation, which ones? What factors were essential, in your opinion, with reference to the response you organized?	In your opinion, have the **measures** taken by your institution/organization/company been adequate? What lessons have you learned? Why?	What was the role played by the **institutional response,** in your opinion, in this specific case?	What was the role played by bottom-up responses (**non-institutional**), in your opinion, in this specific case?

Figure 1. Initial scheme for interviews.

Organizations involved were the Genoa municipality and port authority, regional and urban public transport companies' managers, politicians, executive officers, and figures involved in the local informal response. The interviewees were asked questions about their own structures and the specific competences they were in charge of. Wherever possible, interviewees were invited to exemplify the typical responses the organizations were expected to deliver, such as new technical solutions (viability, circulation, parking, fares) related to their job assignment, but also to speak on what they had observed during the post-event phase in the change of the city transport scope (Figure 2). The sequence of questions also intended to enter into the merits of what the formal collaborative relationships between the different subjects are and how this relationship has changed according to the circumstances.

Figure 2. The 'red zone' that was totally blocked after the collapse. Red points are the residents and industrial owners without any vehicular accessibility to their properties. (source: http://www.commissario.ricostruzione.genova.it, accessed on 29 August 2020).

4. Results

The interviews conducted allowed deepening of the post-collapse situation from different points of view. First of all, different entities (institutional and non-institutional) in charge of supervising the transport problems affected by the transport event were questioned and they provided indications regarding their competence (private urban traffic, logistics, public transport, port freight traffic, sharing mobility). Moreover, operational figures as well as top managers were involved, as key observers in their respective domains, in the decision-making processes.

For all participants, two main focuses were addressed during the dialogue. One concerned the effective response of their entities and their specific task regarding the event. The other dealt with how the informal actions and personal means came to light in facing the challenge and helped to overcome the most critical moments. Subjective implications (such as pain and mourning for the victims) certainly transpired in the interview but were not the object on which the investigation insisted.

From the critical analysis work on the interviews, two categories of results were identified, coming both from the questions and from what was spontaneously highlighted by the interviewees. The first group of themes refers to the observation of the event and the consequent response that the actors were able to grasp, thanks to their privileged working position. Then, the second category of issues goes more specifically into the post-emergency response and was split in two, with the aim of separating institutional and non-institutional elements. The parts relating to the observation of the post-event were

useful to situate the institutional and non-institutional responses and above all to outline the main characteristics of these two groups of initiatives undertaken.

The aspects that the interviewees considered as most relevant, starting from the very beginning of the tragic event, were as follows

- First of all, unexpectedly, the value of the event, as an opportunity to get out of inertia and to acquire new knowledge. This comment does not seem strange; in fact, the variety of problems concerning the bridge but also the situation of congestion in the city was well known to all, but, at that moment, it "became real again" by virtue of the shock that made everyone more aware. The interviewees underlined this as the first impact received by the event and as a significant factor that remains in their memory. Some of them also underlined how a new creativity was born from it in imagining new ways of inventing their own service or product or how to communicate with people (involved or not).
- Activation and timeliness were the keywords used by all participants in the dialogue. In the diversity of their points of view, managers and officers identified this as a factor that determined the response both as a surprise for themselves who acted it but also as an element detected by the population who positively noticed the dynamism.
- From the previous point derives the image of a community that affected respondents. As also addressed by local and national newspapers, the reflection on the big screen of what was being organized in Genoa announced and had a feeling of rebirth crucial for the recovery phase.
- Transversal among all the actors was the underlining of the collaborative aspect. In the timeliness of the response, collaboration established itself as the only possibility, in some cases already structured by the law and the procedures envisaged, in other cases not. The synergic actions carried out between the region, the municipality, and the local and provincial public transport service which found ways to put together resources and decisions are proof of this.
- Put in a negative way, the absence of strategy was also raised one of the points that emerged most by analyzing the response of the Genoese community to the event. Some underlined how the strategic institutional capacity deficit was remedied by a decisive ability to direct and lead. This contributed to restoring a very realistic photograph of the situation: the simultaneous presence of lights and shadows which, however, now appear with greater chiaroscuro, also making possible a critical reflection and perspective in this regard.
- Similarly, in interviews, the aspect of chiaroscuro emerged as regards the professional skills put in place. According to the maturity evolution of professionals mentioned by Scott [53], both companies and local authorities noted that the event gave the opportunity to better understand which skills were actually present and which were not. Awareness of internal capacities and therefore a realistic consideration of response expectations has been considered an element of awareness useful for the growth of organisms.
- Specifically highlighting the transport solutions proposed after the event, all the actors pinpointed the role of communication and the 'channel' of an open dialogue with citizens as an essential factor. In those days of emergency, the need to be informed in real time made citizenship extraordinarily open to receiving messages suggesting recommended choices. The decision not to ban private traffic did not lead to a chaotic situation (in some cases absolutely predictable), but a greater aptitude for waiting for direction, although it was not coercive. This contributed to a positive perception of the information coming from the institutions that has been maintained over time. To date, subscription to municipal information services (street cleaning, works, alerts, events) stands at 700,000 users, (with a city population of 600,000), therefore with an attraction also for commuters.
- In parallel with this last consideration, the growing role of ICT usable as a 'litmus test' of the processes taking place was noted. The perception was that the real effects of the

road solutions could have escaped the decision makers, therefore the constant flow of information was perceived as particularly pertinent to the situation that had arisen, contributing to knowledge that was not possible otherwise.

- The free-of-charge nature of some public transport services destined for the so-called 'red zone' (Figure 2) was considered by the interviewees at the same time a confusing factor for the city (free bus lines alongside some for a fee), but also as an innovative element that could bring the users closer to public transport and in any case as the presence and help of the institutions at the time of the emergency.
- Mentioned in all the interviews, the rediscovery of public transport and carpooling were elements that are crucial for the issues of the paper. The actors noted it from direct experience but also from what was recorded in the perception of the population. The statistics, reported below, attest it. However, it is significant that even the interviews reported it as a factor not only (albeit partially) for urban and extra-urban mobility, but also as a 'discovery' of a social type, as by a community that did not know to be able to count on alternative resources.

As regards the main elements observed in the post-event, those most cited by several people were preferred. However, in the case of the response (institutional or not), it is thought that, even if the observation was brought by a single actor, it had to be the expression of a typical point of view of the belonging structure (institutional and non-institutional) and, as such, contributed to characterize the study.

Concerning the elements underlined about the institutional and non-institutional response, with regard to the first category, the following can be stated.

- At first glance, many actors sustained that a big apparatus of decision-making procedures was put to work. In particular, the choice of a special commissioner in charge of rapid maneuvers was considered crucial in order to gather decisive powers. Many projects were in fact ready, but the union of infrastructure interventions under a single umbrella of initiatives also made 'dormant' works more accelerated (e.g., port infrastructures).
- Related to the previous point, respondents reported the opportunity of a direct interlocution with central institutions as a good element for overcoming the emergency situation. Both these points are related to the establishment, by the state, of two special commissioners, one responsible for reconstruction and one for demolition. From the institutional point of view, another meaningful element was the special Decree (n. 109/2018) that was addressed to Genoa by the central state, which included financial measures in support of suffering economic categories. Many interviews underlined how the overestimation of the predictable outcomes, which, at the time of the collapse could not be so precisely forecast, had a positive influence on activation by various actors that were possibly unreceptive of financing. Although without being sure of being reimbursed, many entities became civil parties in dialogue with the institutions and consented to their cataloging (number of employees for work, means employed, subcontracting, etc.) which had never been carried out so precisely from ordinary policies.
- This result was connected to another observation. The logic that was highlighted in several interviews was that the institutions (central and local) worked in a dual perspective simultaneously and this was considered a success factor. On the one hand, they worked to remedy the emergency, but, on the other, they worked to improve the long-term relationship with the various economic entities, setting aside knowledge and control capacity useful for future actions. This double strategy has led, on the one hand, to an increase of knowledge of 'traceable' dynamics inside the institutions in themselves; on the other, the intrinsic limit of the institutions in knowing how to grasp and understand the new emerging dynamics and adequately support them was highlighted. In this case, reference was made to the lack of local planning capacity regarding innovative actions on sharing and pooling mobility, or to

the lack of investment in cycling and ICT, in such a way as to determine a change in the structure of the city without return.

- Another aspect worthy of being considered is the awareness on the part of the municipal institutions or transport companies that the reorganization of the network and service was an act not only consequent to a tragic event, but constituted the core business of its own skills that can express itself best with versatility even in 'peaceful' contexts. According to the interviewees, this consideration constituted a moment of greater awareness of one's own abilities not only in 'statutory' terms, but in terms of being active, of the ability to decide, to execute immediately, to have sufficient means, etc.
- The quick steps that were taken often highlighted an emotional management of the problem. In fact, respondents were aware of the fact that, what was done well in an emergency could perhaps have been done even better when it was not derived from an ability to intervene promptly but, instead, from an ability to include everything within a more solid and non-impromptu strategy. In face of positive interlocutor dialogues, the awareness of this ability to respond also revealed numerous needs in the thoughts of the interviewees as to how to plan future activities.
- Considering the public transportation sector, one of the aspects raised was the need to work and enter into communication with non-users, that is, with those who are not customers but who are potential customers, and with whom, today, the service does not interface. This is not only to attract new users, but also to better understand their profiles and better target other offers of alternative mobility towards them. The logic that the case of post-collapse mobility has made clear is that users and non-users of public transport are two sides of the same coin in the reorganization of efficient systems for the whole community, without classically dividing mobility in public and private, because both contribute to the same collective interest.

With respect to the non-institutional response, which started in a bottom-up way directly from the citizens or from the undertaking of the intermediate bodies, the most significant thing underlined by the interviewees was the importance of these subjects themselves, for the activation of latent resources that were co-actors in overcoming the emergency.

- All the interviewees said they were amazed by the flexibility and availability with which all the unions in the transport sector moved. Having an almost total union coverage of the workers, the role of the unions took place on a two-fold basis: concertation of decisions with employers and availability of workers to better meet needs. The workers themselves were, by all accounts, involved and reconciling.
- The associations, according to the institutional operators, turned out to be largely not ready to systematically support their members and the dialogue with the institutions. However, this expectation was highlighted in the interviews not as a shortcoming, but as a factor of greater clarity and identification of authoritative and non-authoritative actors. This moment was therefore not only revelatory of the progress made by the associations so far, but also of a possibility of upgrading the community itself that develops in its negotiating capacity with the institutions, which has never happened before in such a systematic way. The event brought to light the different maturities of the protagonists. It was observed that some only passively waited for the funds while others took the opportunity to think about new services and to 'recalculate' their profile and their communicative image to meet the demanding needs of the time.
- Another chiaroscuro that emerged from the dialogues was the division that some made between medium and large non-institutional realities and the small ones, which failed to emerge in the dialogue with the institutions. Assuming this is true, they stressed that the difference in being truly effective actors in the process is the possibility (given only to some) of being supported by public administration. If this is partly true (because due to the nature of the services they offer, which cannot be such if not shared with the institutional side), this also hides a lack of awareness of their own

role, although small, which cannot be parameterized on the large reality. Nonetheless, this confirms what was said in Section 2, about existent literature: insights are needed to investigate the process by which informal institutions can emerge and how this spontaneous involvement works in practice.

- From the point of view of citizens' perception, the interviewees listed, above all, two points. One was the conquered and now undisputed role of infomobility: after having experienced it as indispensable in orienting oneself in this period of daily changes, the population has shown a persistent attachment to this which allows them to acquire real-time information on traffic and transport. This appears even more significant if we consider the high percentage of elderly people in Genoa. The other concerns the growing awareness of the large-scale repercussions of one's life habits. The difference was seen in the turning points. The choices of the individuals on the days of return to work after August 14 could have determined the total stall of travel. All this did not happen, not only due to the institutional and non-institutional interventions which provided alternatives (more trains for passengers, a new road built thanks to private operators for transit of goods), but also due to an assumption of responsibility by those who, despite being able to take the car (in fact, no interdicting measures were taken), left it at home thinking it was the best choice for everyone.

Up to this point in the paper, data for the case were drawn from interviews with key actors belonging to different organizations or privileged observers, by role, of the spontaneous dynamics of citizens. Moreover, documentation for the cases was sourced from publicly available publications that describe the actual situation of the territorial context before and after the event, useful to explain the structure of the existent and posterior formal and informal institutions of public transport and land use planning.

5. Discussion

Based on the foregoing, the documents that were deemed useful to verify correspondence with what was assumed by the interviews are:

1. Decrees and laws issued during the demolition and reconstruction period at the state level;
2. Regulatory plans and official documentation of the port authority and municipality, drawn up locally before and after the event;
3. Statistics: public transport, vehicular traffic (passengers and goods);
4. Statistics: access to web platforms and apps;
5. Official documents and site maps from special commissioner web portal (progress of works and timelines); and
6. Customer satisfaction reports of the public transport service (before and after the collapse).

With regard to the first point, in particular, the sources in which to find correspondence of what was asserted during the interview were Decrees n. 109/18, 555/18, 376/19 and special Laws no. 130/18, 136, and 145 of the same year. The list of interventions inserted in the laws was prepared through joint work between the Port System Authority, the structure of the extraordinary Commissioner, and the management company of Genoa Airport, and is divided into different areas of intervention represented by accessibility infrastructures, by development port, intermodal connections in favor of the airport, and integration projects between the city and the port. The mentioned decrees are representative of efforts delivered by the central power. In virtue of those decrees, 160 million euros, 80 million euros each for the years 2019 and 2020, were paid for the refreshment of the greater expenses faced by road haulers as a consequence of the traffic problems caused by the collapse of the Morandi bridge in Genoa. The interviews referred in several parts to the availability of funding for the suffering sectors, which were also the means for being able to register the various actors and have a greater awareness of the dynamics of the sector. The Port System Authority also took full advantage from the point of view of increasing its skills, arriving at determining, by means of a set of guidelines, reimbursement algorithms according to the criteria included in the decree of 2018. Thanks to the data collected, it was possible to complete a reconstruction of the O/D (origin/destination) matrix of the goods sent

to the port. Law n. 130 "Urgent interventions for the support and economic recovery of the territory of the Municipality of Genoa", contains the prerogatives of the special commissioners for demolition and reconstruction, which the interviewers reported as centralizing and very effective in terms of immediacy and the attribution of powers.

The special skills of the commissioners are also strongly related to the infrastructure aspect. The regulatory port master plan and mainly the DEASP (Port System Authority's energy and environmental planning document, 2019) [54] speak of how the collapse represented an event of exceptional gravity for both the economy of the city of Genoa and for the growth of the port (point 2). Despite the activation of timely measures to contain the negative impact of the event, the progress of Genoese port traffic, after a period of growth, suffered a setback. The 2018 financial year concluded, however, with positive results: 69 million tons handled (+1.7% compared to 2017). With regard to what the interviewers testified, the official documents reported the infrastructural interventions that were built thanks to the intervention of the private operators and which instead were planned thanks to the institutional action of the plenipotentiary commissioner. At present, the traffic inside the port takes place longitudinally to the coast line to serve the several piers; an organization which, with the appropriate precautions and the updating and re-functionalization works, will be preserved even after the implementation of the projects included in the commissioner program. In the western section, where there is a temporary junction with the new "Superba" road (mentioned above), built in utmost urgency following the collapse of the Morandi Bridge, the site will be the subject of implementation thanks to a specific project of the Extraordinary Program. The DEASP also stresses that, although some interventions were made possible in an accelerated manner for the emergency, they were already effectively included in the institution's ordinary programs. The document also concludes that some works, now built but hypothesized at the time as buffer solutions, have been the object of attention from the community for their long-term stabilization. As far as work progression is concerned, the website relating to the mandate of the extraordinary commissioner is also extremely rich in data and images that visualize the phases of the works and allow a reconstruction of the timeline (point 5).

Regarding points 3 and 4, the author had the opportunity to view the statistics relating to the trends of public transport (routes provided, travel times, free lines, passengers divided by line, etc.) before the preparation of the interview with the operators in the sector. The same applies to the data of private traffic (flows per arch and travel times) and the use of the car-pooling system. Some of the data, reported in paragraph 2, were also expressed in the local press in a popularized and aggregated form. One surprising thing, that was found in the traffic surveys, was that the movements of citizens had to be reversed or relocated day by day (about 7000 vehicles/day per road), because it was necessary to carry out an experiment to understand what was the best solution from the circulation point of view. Citizens, informed from time to time, followed the directives, making experimentation easier: the surveys carried during the post-emergency period showed that the huge quantity of vehicles that were present during rush hour on some arches had never been registered in times of 'peace'. In other terms, in ordinary conditions, it is not possible for so many vehicles to pass on those same lanes. This was thanks to the driving style adopted by each individual driver, that responsibly determined the position, speed, and performance of the vehicles.

Concerning point 6, the customer satisfaction report was very important to observe the changes in the perception of public transport by users. This survey was carried out at the end of 2019 and represents the period in which most of the special measures were implemented. From there, one can understand what emerges from the "prolonged coexistence" with the inconveniences and with the new services that were introduced. The first is that the population was 88% satisfied with the service and more than 70% say that the service had improved since the previous year. In particular, on the topic of ICT mentioned by the interviewees, the data referring to communication tools were significant: more than 90% of users have learned about the app (from the interviews, we learned that

the apps are accessed around 40,000 times every day). A plebiscite was established for the increase of the metro service which leads to the 'red zone' around the area of the collapse and more than 95% consented to the free-of-charge nature of some shuttle bus services that have been established as the only means for the areas closed to private traffic. In addition, surveys, which were carried out after, stated that there was a propension to change the mode of transport of about 20% of non-users.

Elements present in the interviewees were largely verified (directly or indirectly) by the documents issued before, during, and after the emergency phase. The continuous confrontation between the most salient points emerged during the interviews and from what was collected from the situation's framing data allowed, through an iterative process, both the posing of more targeted questions and the search for specific materials to support the issues raised spontaneously by the interviewees (and which had not been considered a priori). Furthermore, both information obtained from the interviews and information from the official documentation coincided with the major trends present in the literature, as reported in Section 2, especially in reference to the role of information and communication technologies (ICTs) as a key enabler; the apps and social media usage as a novel perception of urban life and its behaviors; and the first experimentation of systems related to the MAAS paradigm and sharing/pooling mobility.

6. Conclusions

The interplay between institutional and non-institutional structures is of big interest today and there is a consistent research literature about it. Nevertheless, in the paper, their mutual relationship was observed effectively and in a privileged way in the extreme case study of the collapse of the Morandi bridge. As recalled by the interviews made by the author to pivotal witnesses of this happening, after 14 August 2018, a long phase of reorganization of the urban transport service and the circulation in the city dealt with the whole metropolitan area. The first themes addressed to interviewees referred to the observation of the event and the consequent response that the actors were able to grasp, thanks to their privileged working position. Then, the second category of issues went deep, more specifically, into the post-emergency response and was split in two, with the aim of separating institutional and non-institutional elements.

Strong efforts made by the central state and by the local government bodies (institutional), especially with regard to restoring the mobility of goods and passengers, simultaneously made it possible to rediscover the role of initiatives not decided by law, but implemented by private operators or ordinary citizens (non-institutional), or through unpredictable collaborations.

Findings, derived both from observation by experts and confirmed from statistics, reveal that non-institutional initiatives smooth major criticalities, providing evidence that:

1. As reported in the paper, measures undertaken not only proved effective but also allowed an upgrade of the awareness of the wider community and demonstrated efficacy precisely when an institutional-type action was also associated with a non-institutional synergistic response: this happened for the management of the emergency in port, for the municipal-scale circulation solutions, but also for the collaboration with the unions and in the adaptation of the population. For the analysis of the case study, the author used a group of interviews conducted with actors of the double typology (institutional and non-institutional) as privileged observers of the dynamics of Genoese transport. For comparison, a related official documentation was useful to verify that the ideas emerging from interviews also had 'coverage' deriving from supporting data, according to the methodology suggested by the work of Rye et al. [6];
2. The two modes are absolutely complementary. Moreover, the most positive effects of this complementarity, from the governance point of view, refer not only to the application of procedures but also to the strengthening of the resources of the actors and their ability to face problems;

3. What emerged from the interviews, and in general from the observation of the interplaying dynamics in the city of Genoa in the occurrence of the calamitous event, was also compared in the paper with the currently most consolidated trends in urban mobility. Throughout the paper, reference was made to MAAS and the usage of apps, rising sharing-mobility solutions, and the increase of the perception of usefulness of infomobility and ICTs to cite the main ones.

Basically, such a complex phenomenon as transport, as being in need of coordination and organizational interaction involving both formal and informal bodies, could always be perceived as evidence of that collaboration, but it is all the more evident in the case of an unpredictable event like the one of Genoa. In this sense, the Genoa case is a paradigmatic example of how the informal crucially works to support the formal in the operation and improvement of transportation assets, where Marsden and Groer [7] sustain that, even if formal structures matter, a broader governance environment is crucial as well.

To conclude, we can say with Amin that a practical and realistic result, grounded constantly on experiments, through which difference and multiplicity are mobilized for a common gain, could define a good city as an expanding habit of solidarity. The facts that occurred in Genoa, during the phase of reorganization of the urban transport service and the circulation in the city, underlined how the response of citizenship is a crucial element, also from the governance point of view. There is a great space for future exploration regarding how these lessons learnt in emergence cases can improve collaboration among sectors of society even in ordinary circumstances.

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