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Abstract

Transport geography and mobilities studies share the same object of study – mobility - which nonetheless has been differently conceptualized by the two disciplinary fields. This difference impacts their analytical, interpretative and operational approaches as well as their actual contribution to transport planning, so that despite their proximity, mobility studies and transport geography still appear as bordering disciplinary fields. To deal with concerns that affect the way we address urban mobility issues, the paper suggests putting into practice what the heterodox economist Albert Hirschman famously called trespassing, as a tactic to cross disciplinary boundaries and progress with some puzzles through detours and forays into other fields. In doing so, the paper aims at exploring how trespassing enhances the way mobilities studies and transport geography may usefully cross-fertilize each other and enhance operational responses to mobility issues, by analysing the conceptual and operational innovations that could benefit from such a reciprocal interchange. To discuss forms of significant trespassing for mobilities, the paper proposes to detect and address emerging forms of everyday mobility, taking long distance commuters (LDC) in the Milan Urban Region as an example. Here, trespassing allows the merging of quantitative and qualitative datasets to understand the articulated nature of this and other forms of contemporary mobilities. Working on the interpretative and operational challenges posed by these emerging mobilities that question key principles of the traditional 'utilitarian approach' to transport planning, the paper discusses the conceptual, analytical and operational directions along which trespassing may be developed.

Keywords	trespassing; mobilities studies; transport geography; transport planning; interdisciplinarity; long distance commuters

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Trespassing for mobilities. Operational directions for addressing mobile lives

Abstract: Transport geography and mobilities studies share the same object of study – mobility - which nonetheless has been differently conceptualized by the two disciplinary fields. This difference impacts their analytical, interpretative and operational approaches as well as their actual contribution to transport planning, so that despite their proximity, mobility studies and transport geography still appear as bordering disciplinary fields. To deal with concerns that affect the way we address urban mobility issues, the paper suggests putting into practice what the heterodox economist Albert Hirschman famously called *trespassing*, as a tactic to cross disciplinary boundaries and progress with some puzzles through detours and forays into other fields. In doing so, the paper aims at exploring how trespassing enhances the way mobilities studies and transport geography may usefully cross-fertilize each other and enhance operational responses to mobility issues, by analysing the conceptual and operational innovations that could benefit from such a reciprocal interchange. To discuss forms of significant trespassing for mobilities, the paper proposes to detect and address emerging forms of everyday mobility, taking long distance commuters (LDC) in the Milan Urban Region as an example. Here, trespassing allows the merging of quantitative and qualitative datasets to understand the articulated nature of this and other forms of contemporary mobilities. Working on the interpretative and operational challenges posed by these emerging mobilities that question key principles of the traditional 'utilitarian approach' to transport planning, the paper discusses the conceptual, analytical and operational directions along which trespassing may be developed.

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1. Introduction

> "The urban phenomenon, taken as a whole, cannot be grasped by any specialized science. Even if we assume as a methodological principle that no science can turn its back on itself but that each specialization must maximize the use of its own resources to comprehend the global phenomenon, none of these sciences can claim to exhaust it" (Lefebvre, 2003, p. 53)

In the last decades, mobility has been the object of a constantly expanding field of research. As a growing body of knowledge, it has gradually gained significant space within established disciplines such as transport geography, but still it struggles to impact how we tackle urban mobility issues in the planning and policy domain. The interest in manifold, uneven forms of mobilities and immobilities generated theoretical shifts, methodological developments and novel research questions, triggering a 'mobilities turn' in the social sciences. These advancements shared an interest in mobilities and their influence on increasingly mobile lives, social practices, and institutions (Sheller & Urry, 2006, 2016; Cresswell, 2006; Kaufmann, 2002). Mobilities scholarship has therefore become a field that goes far beyond the issue of simple physical transportation. Nonetheless, this progress in the understanding of manifold mobilities partially impacted transport geography approaches, originally characterised by a mainly quantitative nature (Shaw & Hesse, 2010; Shaw & Sidaway, 2010; Schwanen, 2018a). More importantly, this 'mobilities turn' has so far had few opportunities to affect ordinary mobility planning processes, still characterised by a toolbox of approaches that are well-established, ready-to-implement and easily transmissible. The relevant interpretative contributions referred to the ongoing mobility behaviours, processes and emerging forms of mobility are growing (Watts & Urry, 2008, Lyons *et al.*, 2007; Jensen, 2013; Viry & Kaufmann 2015; Martens, 2016), and increasingly address directly also the policy realm (Watts & Lyons, 2010; Middleton, 2011).

The approaches of the mobilities scholarship tend to be experiments that interest only a part of the transport geography field (Schwanen, 2017). Moreover, both disciplines produce descriptions *of* mobility-related phenomena rather than producing prescriptions *for* tackling them. Their analytical approaches therefore have not been formally adopted within consolidated institutional planning processes, reducing thus their contribution to the production of a 'usable knowledge' (Lindblom and Cohen, 1979) that directly addresses urban policy. According to Healey (2006), these are episodes of innovation that can aspire to change governmental practices, but often they do not become consolidated approaches in planning processes that, on the contrary, still mainly aim for the efficiency of movement and rely on quantitative expert knowledge from disciplines such as engineering and economics (Schwanen, 2018b). Despite their proximity, mobilities studies and transport geography still appear as bordering disciplinary fields[1] with few but increasing occasions of mutual operative interferences (Shaw & Hesse, 2010; Shaw & Sidaway, 2010; Kwan & Schwanen 2016; Weis & Axhausen, 2012; Schwanen, 2018a). Such limitation affects the way we address urban mobility issues.

Such distinct disciplinary boundaries between mobilities studies, transport geography and transport planning, which affects the very conceptualization of the object of study (mobility), can be overcome by putting into practice what the heterodox economist Albert Hirschman famously called *trespassing*. According to Hirschman, trespassing "means moving freely, back and forth in a creative way, between realms that exist, and not claiming to establish a new space" (Stame, 2017, p. 387). This crossing of disciplinary boundaries presents the opportunity to progress with some puzzles through detours and forays into other fields (see for example Hirschman, 1981). Crossing disciplinary borders is part of a 'propensity for self-subversion' (Hirschman, 1995), according to which opinions and convictions should take advantage of new arguments and evidence to question previous stances and understand new dynamics. The intention is not to establish a new space between disciplines that can be explained by the risks associated with the definition of new paradigms, which may hinder the comprehension of social phenomena by aiming more at proving theories rather than understanding realities (Hirschman, 1970). Instead, the aim is to facilitate a 'problem solving' approach, with a pragmatic attitude that moves "from ideological certainty to more open-ended, eclectic, sceptical inquiry" (Hirschman, 1986, p. 30). Such a pragmatic attitude may promote tentative forms of trespassing that, by trial and error, may successively generate varied interdisciplinary approaches and configure manifold potential forms of interaction between disciplines. In doing so, trespassing constitutes a first step towards interdisciplinarity – here understood as the interaction between two or more disciplines, which can range from a simple communication of ideas to the integration of main concepts, epistemology, terminology, methodology of procedures as well as data and the organization of research and practices (Michaud, 1972). However, trespassing is not devoid of risks, since "there are serious pitfalls in any transfer of analytical tools and modes of reasoning developed within one discipline to another. (…) The distance between reality and intellectual schema is here likely to be both wider and more difficult to detect than was the case as long as the scheme stayed 'at home'" (Hirschman, 1971, pp. 3–4).

Aware of the potentialities and the risks intrinsic to trespassing, the paper aims at exploring what forms of trespassing may enhance the way we tackle urban mobility issues by exploring suitable operational directions for enhancing the interaction between transport geography and mobilities studies and, consequently, improving current analytical and operational transport planning tools. In doing so, the paper uses trespassing

[1] A discipline is an organizing category of the scientific knowledge. A discipline adopts its own statute, its own rules and methods of investigation, its own analytical tools, its own organizing concepts, its own 'specialized' languages (Morin, 2008). It is a *milieu* of experiences, which are subject, in a fragmentary way, to selective revisions. Based on this, within the same discipline it is possible to recognise different disciplinary fields, according to how they *construct* the objects of analysis, project or design. Although it is subject to general disciplinary rules, a disciplinary field is a relatively autonomous 'space' that has its own internal rules, selected relevant themes, as well as methods and criteria for their treatment.

as a 'tactic'[2] (De Certeau, 1980) to investigate if and how mobilities studies, transport geography and transport planning may usefully cross-fertilize each other (section 2). In order to discuss forms of significant trespassing for mobilities, section 3 deals with emerging forms of everyday mobility, as in the case of long distance commuters (LDC) in the Milan Urban Region. The focus on LDCs intends to offer a possible application of trespassing as a way of reciprocally contaminating quantitative and qualitative approaches, with the aim of improving the interpretation of the complexity of mobility practices that challenge two key principles of the traditional 'utilitarian approach' in transport planning, such as the concept of travel as a derived demand and the users' objective of travel cost minimization. Based on this, trespassing is finalised to create the conditions for reconceptualizing the object of study, facilitating the ways in which different disciplines deal with the same research object and proposing a methodological design able to improve the effectiveness of the interpretation of mobility practices. However, the proposed trespassing is not specific of a place or a mobility phenomenon, but could be referred to different kinds of settings and mobilities. Focused on these emerging mobility practices, section 4 discusses the conceptual, analytical and operational directions along which forms of trespassing may be developed in the future.

2. Trespassing the disciplinary borders between transport geography, mobilities studies and transport planning

Transport geography and mobilities studies share an object of study - mobility - that is nonetheless differently defined and constructed by the two disciplinary fields, impacting their analytical, interpretative and operational approaches, as well as their actual contribution to transport planning.

Mobilities studies emphasised the manifold mobile practices and phenomena which are transforming individuals, territories and societies, focussing on how different forms of mobility reflect social relationships and become the main organizer of the social world.(Urry, 2000, Cresswell, 2006; Kaufmann, 2002; Sheller & Urry, 2006). From the perspective of mobilities studies, mobilities are treated critically and in context (Adey et al. 2014, p. 2) , involving methodological challenges and a "new style of analysis" with the emergence of "mobile methods that combine social and spatial theory in new ways" (Sheller, 2011, p. 1), as well as traditions such as ethnography with the use of new technologies to deal with the contextual, situational, embodied mobility practices, . These disciplinary fields have greatly innovated the understanding of mobilities, developing the concept into "a hub of analytical insight for a diverse and expanding range of different parties, whether academic, applied, or creative" (Büscher, Sheller, & Tyfield, 2016, p. 485).
Transport geography has partially adopted the innovative insights deriving from the 'mobilities turn', moving – at least in part – beyond a traditional conceptualisation of mobility as an interaction of nodes, networks and demands that trade space for time and money, in order to overcome the friction of distance (Rodrigue, 2017). In fact, innovative conceptualizations of mobility can be traced in the reflections of some geographers already in the 1980s and 1990s, ascribing a constitutive role to mobility in defining the spatiality of human societies (Lévy, 1999; Raffestin, 1983).

Nevertheless, until now mobilities studies have had mainly episodic operational implications for planning and policy, due to their difficult replicability that prevents them from consolidating as ordinary approaches. Mobilities research has considered intersections with other disciplines, prioritizing theoretical perspectives of social research over operational contributions (Büscher et al., 2016). In this field, 'mobilities' has become a broader concept (Adey, 2006) that suggests different forms of 'trespassing', while, at the same time, this

[2] Following De Certeau (1980), tactic plays with events to turn them into opportunities, combining heterogeneous elements within a contingent time, the synthesis of which does not have the form of an accomplished discourse, but rather that of an act of doing.

expansion has contributed to blurring the conceptualisation of mobility as well as its analytical and methodological implications.

While dealing with the need to address the ineffectiveness of the available transport models in relationships to emerging mobility practices and their space-time variabilities, the prevailing transport planning approaches remain strongly linked to the need for well-established, ready-to-implement and easily transmittable approaches, pursuing the internal efficiency of transport systems (Martens, 2006). In transport planning, the research for tools able of profiling the multiplicity of mobilities and dealing with individual mobility behaviours struggles with the need of to providing a comprehensive 'cookbook' for transportation planning, or a ready-to-implement approach.

This section discusses the disciplinary borders between transport geography, mobilities studies and transport planning, focusing on two elements. On the one hand, there are the current ongoing attempts to establish a reciprocal trespassing between transport geography and mobilities studies; on the other hand, there is the relevance of advancing such attempts so as to involve transport planning, providing an operational dimension to these cross-discipline movements. While we are aware of the opposing conceptualisations, on which the very foundations of transport planning and mobilities studies are based (Kwan & Schwanen, 2016), as well as of the growing internal heterogeneity of such disciplinary fields, the reflection we propose here emphasises an operational perspective.

2.1 Attempts at trespassing between mobilities studies and transport geography

Mobilities studies have fostered a new understanding of contemporary mobilities, thanks to research evidence and novel combinations of social and spatial theory (Sheller, 2011). Reconceptualising mobilities as "part of the process of social production of time and space" (Cresswell, 2006, p. 5), they offer new interpretative and operative perspectives in at least two directions (Pucci, 2016).

On one hand, mobility has been conceptualised as a total social phenomenon (Bassand 1986, p. 25), for "understanding the connections, assemblages, and practices that both frame and generate contemporary everyday life" (Adey and Bissel, 2010, p. 2). Based on this interpretation, mobility represents an analytical tool (*analyseur* in the words of Bourdin, 2005, p. 16), useful for describing the socio-spatial-temporal transformations in urban life and work-programs (Bourdin, 2005; Kaufmann 2002, Sheller & Urry, 2006; Cresswell, 2006), and for identifying urban rhythms (Amin & Thrift 2002, p. 17).
At the same time, mobility contributes to structuring urban spaces as well. In fact, it not only determines the intensity with which the territory and its networks are used, but also becomes an "act of territorialisation" (Raffestin, 1983). According to Lévy (1999, p. 157), "mobility is not only a technical tool for linking places. Insofar as the accessibility between places is a condition of existence of the city itself, mobility becomes an indisputable process of urbanogenesis". In doing so, "the accelerated reorganisation and restructuring of the geography of movements define the spatiality of human societies" (Soja, 2004, p. 176). Based on this interpretation, mobility is a *spatial* capital that contributes to the individuals' capabilities of performing activities at certain locations, due to the interplay of places, transport systems and individual abilities.

Transport geography has at least in part engaged with these re-conceptualisations of mobility, assuming as a starting point that "mobility is inherently geographical since in its most basic form it is about movement between places across space" (Shaw & Hesse, p. 308). As Kwan and Schwanen (2016) argued, the geography scolarship in the first half of the XXth century used the word 'mobility' with a wide diversity of meanings, which received an impetus in the early XXIst century due to the mobilities turn.
The encounter between transport geography and mobilities studies represents primarily a move from the quantitative attitude, traditionally associated with transport geography (Spinney, 2009, p. 819) to approaches better suited to considering the 'more human' qualities of mobility that more established utilitarian concepts - such as demand and supply or utility maximisation – do not grasp (Shaw & Hesse, p.

309). By combining spatial and social dimensions in the study of emerging phenomena across various scales, "from the small-scale bodily movements, through infrastructural and transport aided movements to global flows of finance or labour" (Cresswell 2011, p. 552) a more holistic understanding of mobility has gained traction, widening the established focus on daily forms of mobility (Shaw & Sidaway, 2010; Spinney, 2009). Addressing new research objects has also led to the adoption of new methods, combining both quantitative and qualitative approaches, developing an "exploration of alternative epistemological and methodological approaches as part of increasing interaction with other geographic subfields" (Goetz, Vowles & Tierney, 2009, p. 331).

What emerges from this short overview are attempts of trespassing that already characterise the engagement of transport geography with the concepts, objects and methods that mobilities studies have put under the spotlight. In fact, transport geography is currently trespassing in different directions. This interdisciplinary movement results from an attempt to move from established, quantitative oriented analytical frameworks (Goetz et al., 2009) to more marginal positions within the field of geography (Shaw & Sidaway, 2010). Two main trends can be recognised, one towards 'the general' and the other towards 'the particular' (Schwanen, 2017). The former attempts to take advantage of the rise of big data and the consequent interdisciplinary discussion on human mobility laws, although prone to a number of conceptual and interpretative risks (Kwan, 2016). The latter, instead, engages with the manifold insights from mobilities studies. As previously recalled, in this sense, transport geography and mobilities studies can at least in part be conceived as 'two sides of a common boundary' that "contain various approaches that might be thought of as distributed along a continuum" (Shaw and Hesse, 2010, pp. 306-307). Even the current debate on transport geography recognises the manifold forms of trespassing already in place, especially the movement of geographers towards the insights provided by mobilities scholars (rather than the opposite).

Another form of trespassing that could be relevant, but which is currently less evident, is the focus on the operational implications of studying mobilities. Approaching manifold forms of mobilities can be relevant to "better engage with broader socio-economic or political issues and processes" (Shaw & Hesse, 2010, p. 309). With an explicit operational interest, it may also lead to addressing mobility issues more effectively. It may be assumed that "unpacking further the interaction between transport and society will help us figure out ways of moving less, or at least differently" (Shaw & Sidaway, 2019, p. 514), resulting in better policymaking. However, transport geography and mobilities studies have until now focused more on descriptions *of* new phenomena through the use of new research methods. Yet their resulting findings have not become descriptions *for* better addressing emerging mobility issues. In this sense, the already ongoing trespassing between transport geography and mobilities studies should consider moving towards a third front, that of transport planning.

2.2 Trespassing towards transport planning

Transport planning, as of now, has not translated into practice the conceptual and methodological advancements provided by mobilities studies, despite their enriching contributions to several adjacent disciplinary fields (Büscher et al., 2016). The twofold role of mobility as a product of social practices as well as a producer of spatiality originated specific methodologies puts it in an important position, given the relevance attributed to the material conditions of mobility and its associated practices. New 'mobile' research methods able to "simulate intermittent mobility" (Sheller & Urry, 2006) have been developed that allow the study of very limited samples using experimental approaches: these include interactional and conversational analysis of people as they move; mobile ethnography involving itinerant movement with people; after-the-fact interviews and focus groups on mobility; textual, pictorial, or digital time–space diaries; various methods of cyber-research, cyber-ethnography and computer simulations; imaginative travel using multimedia methods attentive to the affective and atmospheric feeling of place; tracking affective objects that attach memories to places; and, finally, methods that measure the spatial structuring and temporal pulse

of transfer points and places of in-between-ness, where the circulation of people and objects has slowed down, stopped, or else facilitated and sped up (Sheller, 2011, p. 7).

Mobile methods nonetheless have not been used with wider, numerically significant populations, nor have they been structured for robust analytical protocols that could be verified, communicated and replicated. These elements would be fundamental for the spreading and acceptance of such methodologies. While these steps should not be considered exhaustive in relation to a specific category of a problem, their relative scope and effectiveness should be clear and able to prove their capacity to respond and solve problems that the scientific community recognises as urgent (Kuhn, 1962, p. 44). In fact, the methodological advancements provided by mobilities studies could be significant for improving established transport planning tools, which still experience significant limitations when dealing with different forms of contemporary urban mobilities, their spatial reflections, the individual opportunities and social dynamics they generate.

Transport planning maintains a traditional focus on predicting flows of people and goods more so than understanding mobility practices and habits, to define the operational actions necessary to manage them. In doing so, the discipline has developed descriptive and exploratory models to assess the complex interplay of individuals' needs and demands, the locations of activities and transport resistance factors such as time, money and efforts (van Wee, 2013, p. 5). These focal points have been increasingly criticised for a number of reasons, such as their demand-driven nature that creates feedback loops (Martens, 2006) and results in social insensitivity (van Wee, 2011). Also, analyses regarding individuals' mobilities introduce specific operational challenges, such as transport inquiries and models which are unable to build reliable scenarios based on the sole projections of flows assumed to be spatially and temporally stable. The aggregate methods to study mobility as geographic displacement (e.g. traffic census, O/D matrices of flow) are in fact predominantly based on short time periods and on proportional relations between utility and the monetary or temporal cost of movement. These proved ineffective since they do not analyse complex, differing mobility temporalities and also reduce travel preferences to the minimisation of costs and travel times.

Innovative forms of prediction stem from the need to replace the current "fluid dynamics-based models" and develop approaches with their "own definition of movement in physical space and flows of particles, individuals, cars, motorcycles, etc… in the space" (Kaufmann, 2011, p. 25). For example, activity-based transport models focus on activity patterns rather than individual trips (Ben-Akiva & Bowman, 1998). Travel behaviour studies instead operate on a modal shift. To do so, these depart from the mode choice concept (as defined some decades ago in the classical 4-step transport model) and exploit the added value of a joint estimation of individual features, activity patterns and changes in the transport supply that may determine behavioural changes. This framework has also suggested addressing the behavioural mechanisms involved in a modal choice process and consider concepts such as co-modality and modal shift, according to which different real-life constraints determine the best ambits of use of transport modes (Diana & Pronello, 2010). In these approaches, mobility emerges as a complex pattern of paths and activities in space and time and the outcome of the interconnections between individual and external (e.g. environment and social structure) factors (Järv, Ahas, & Witlox, 2014; Pred, 1984).

While the approaches of the mobilities scholarship open unprecedented empirical and analytical perspectives for trespassing in transport planning, these have only been applied sporadically in practice and remain as promising experiments. In fact, until now, research in the field of transport engineering has not engaged much with the ongoing reconceptualisation of mobility in the social sciences. While the discipline has attempted to address the ineffectiveness of the available transport models, mobility continues to be considered simply as travel, meaning that the transformations of contemporary mobility behaviours are subsequently also overlooked.

As the 'sides of a common boundary', transport planning, transport geography and mobilities studies show the relevance and the feasibility of different possible forms of trespassing. Trespassing is intended as a

multidirectional, free back-and-forth movement and transitional phase oriented towards creating more fertile relations between these three disciplinary fields. From a methodological and analytical perspective, trespassing proposes a different attitude than those of the 'mixed methods'. A research approach including quantitative and qualitative methods in fact is not a sufficient condition to consider a method as 'mixed' (Barbour, 1999), as also the frequent lack of integration between quantitative and qualitative methods used in the same research demonstrates (Bryman, 2007). Trespassing therefore intends to enhance the possibility that "quantitative and qualitative components are reciprocally illuminating" (Bryman, 2007, p. 8), also through a reconceptualisation of the definitions and the methods that different disciplines use to address their research object. In the case of mobility, trespassing is a cognitive attitude to contaminate approaches in order to improve the interpretation of the complexity of mobility practices. The challenge is not necessarily to combine quantitative and qualitative data, but rather to create the conditions for reconceptualizing the object of study, shared by transport planning, transport geography and mobilities studies. In doing so, researchers from different disciplines can propose methodological designs able to improve the effectiveness of the interpretation of mobility practices for addressing mobility policies.

Based on this framework, trespassing for mobilities could evolve beyond a shared attempt to define mobility as a spatialized form of social interaction dependent on the availability of transport and communication services to include individual aims, attitudes, habits, abilities and preferences as well. In this vein, we propose emerging forms of everyday mobility as a suitable testbed to discuss forms of significant trespassing of mobilities.

3. Emerging mobilities as a testbed for trespassing

When discussing emerging mobilities we refer to work-related mobility practices where mobility, as a movement, is an 'epiphenomenon' of wider transformations in the job market, thus capable of describing social, spatial and temporal changes. In these practices we can read the way in which changes in working patterns increase the complexity of mobility patterns in terms of frequency, time devoted to displacements and distances covered. In this way, emerging mobilities are manifold: including long distance commuting, job-related mobilities (at a regional, national, international scale), different forms of residential (im)mobility including multi-locality, and mobility in atypical time slots. Despite being work-related trips, emerging mobilities do not refer to traditional categories of commuting; rather, through their time-space variabilities, they describe changes in working patterns. Based on this premise, through the study of emerging mobilities we can describe more than movements and their intensity in terms of flows: we can detect the combined effects of socio-economic and lifestyles changes, individuals' aims, as well as territorial transformations (in term of transport supply and land use) that have increased, fragmented or diversified individuals' mobility.

Such emerging mobility practices pose interpretative and operational challenges. First, they question two key principles of the traditional 'utilitarian approach' in transport planning, such as the concept of travel as a derived demand and the understanding of users' objective as travel cost minimization. Second, they inquire into how traditional 'small data', including qualitative data, can be used together with big data in order to overcome the limitations of the latter (Kitchin & Lauriault, 2015). Trespassing can contribute to describing these emerging mobility practices and their temporal space variability by matching approaches capable of describing *mobility as a movement* and *mobility as a system organized around interlocking temporalities*. These require approaches that use quantitative data to detect intensity and spatial dimensions of this phenomenon, together with the networks that support these mobilities (*mobility as a movement*). These practices also benefit from qualitative approaches that analyse the ways in which resources (tangible and intangible, physical and personal) and individual goals are combined, intercepting needs expressed and goods generated by these same mobility practices (*mobility as a system organized around interlocking temporalities*). In this framework, trespassing offers a methodological perspective to match different data

sources, contributing to the discovery of unexpected phenomena that would not emerge statistically as well as to tackling the practical issues they raise.

Among various emerging mobility practices, long distance commuting (LDC) is particularly suited to trespassing. As research[3] conducted in two steps in some European countries shows (Viry & Kaufmann, 2015), Long distance commuters (LDCs) can be defined as workers that spend at least 1.5 hours every day to reach their workplace in order to avoid residential mobility; they are also part of other emerging work-related long distances mobilities, such as overnighters (those spending at least 60 overnight stays away from their home during a 12 month period for occupational reasons), recent re-locators (moving over a distance of at least 50 km) and people in long distance relationships. LDC practices result from the combined effects of labour market evolution, as well as from a familiarity with the territory and the transport and communication networks that allow the lengthening of movements (Viry & Kaufmann, 2015). For these emerging forms of mobility, trespassing may be a relevant approach of study since "the crossing of space, in terms of speed and distance, should not be used as an indicator to describe (this) mobility. (…) Mobility cannot be reduced to transport. Transport is first and foremost a demand that is derived from the lifestyles and plans of actors. Our movement is born of obligations, constraints, or windows of opportunity that open to us. The consequence of this pseudo-mobility is that the increase in travel time budgets is no longer experienced as wasted time but is increasingly becoming a social time in its own right" (Kaufmann 2016, pp. 40–41).

LDC affects one in two people over their lifetimes: if not personally, then at least indirectly as a family member has undergone a period of long distance commuting during his/her working life[4] (Viry, Ravalet, & Kaufmann, 2015). This form of mobility highlights different ways of using travel time as a 'productive time' for working, connecting socially or relaxing. At the same time, LDCs experience their extensive travel as reversible (Kaufmann, 2005), since they are able "to cross long distances in a short time, in order to avoid residential mobility, permitting us to link different individual ranges of activities once spatially irreconcilable" (Vincent-Geslin & Kaufmann, 2012, p. 33). According to Schneider and Meil (2008, p. 34), LDC is the most widespread form of recurring high mobility, involving 11% to 15% of the workforce in Switzerland, France and Germany. LDC allows these workers to have the sedentary lifestyle they seek, thanks to the performance of transport networks (speed of connection), in order to "combine, in everyday life, places of activities that were before spatially impossible to assemble" (Vincent-Geslin & Ortar, 2012, p. 40). This phenomenon represents a spatial reversibility, more than a social one. If the compression of time and space provides more leeway for individuals, this condition is accompanied by a growing mobility injunction which tends to compel the social movement of individuals (Vincent-Geslin et al. 2016, p. 47).

To test the relevance of a trespassing tactic, we investigate the mobility practices of LDCs in the Milan Urban Region (Northern Italy). To identify these mobility practices, we assume travel distances[5] as a point of reference rather than that of travel times, since we focus on a densely metropolitan area where congestion leads to a distortion in the measurement of travel time, as well as in continuity with some research (Öhman and Lindgrend, 2003). Putting in place a trespassing tactic, we integrate a sequence of quantitative analysis

[3] The EU research "Job mobilities and Family Lives in Europe" (http://www.jobmob-andfamlives.eu/) investigated the job related high mobilities of a sample of 7220 people in 2007 in six European countries (Germany, France, Spain, Switzerland, Poland and Belgium). This survey has been updated in 2011 only in Germany, France, Spain, Switzerland.

[4] According to the Job Mobilities and Family Life Survey, the high mobility rate of the working population ranged from 11 per cent in France and Switzerland to 15 per cent in Germany in 2007 (Viry, Ravalet, & Kaufmann, 2015, p.31). While high mobility concerned 9–12 per cent of the population aged 25–54 in 2007, 44 per cent of the sample said they had already practised high mobility during their careers (Schneider & Meil, 2008).

[5] The attributes and criteria in defining LDC are not unequivocal in the current research (Öhman & Lindgrend, 2003; Ralph 2014; Viry & Kaufmann 2015; Bissell et al. 2017; Schneider & Meil; 2008) in which LDC can be detected by considering both travel times and spatial distances covered to reach work places. In our research, we selected LDCs by considering travel distances over 75 km one way. The distances have been calculated using the graph of the infrastructure network and are therefore geographical distances between an origin (home) and a destination (workplace).

with complementary qualitative research based on several interviews with a sample of LDCs. Interviews aimed towards understanding the emerging needs, times and conditions of using spaces and networks, as well as the intensity of interactions activated by these practices. The proposed approach is twofold (figure 1): through quantitative data we analysed the *movement* component of the LDC phenomenon (the spatial dimension of this phenomenon and the networks that support this mobility), while with the qualitative data we have deepened the *behavioural* component (experiences, capacities, needs).

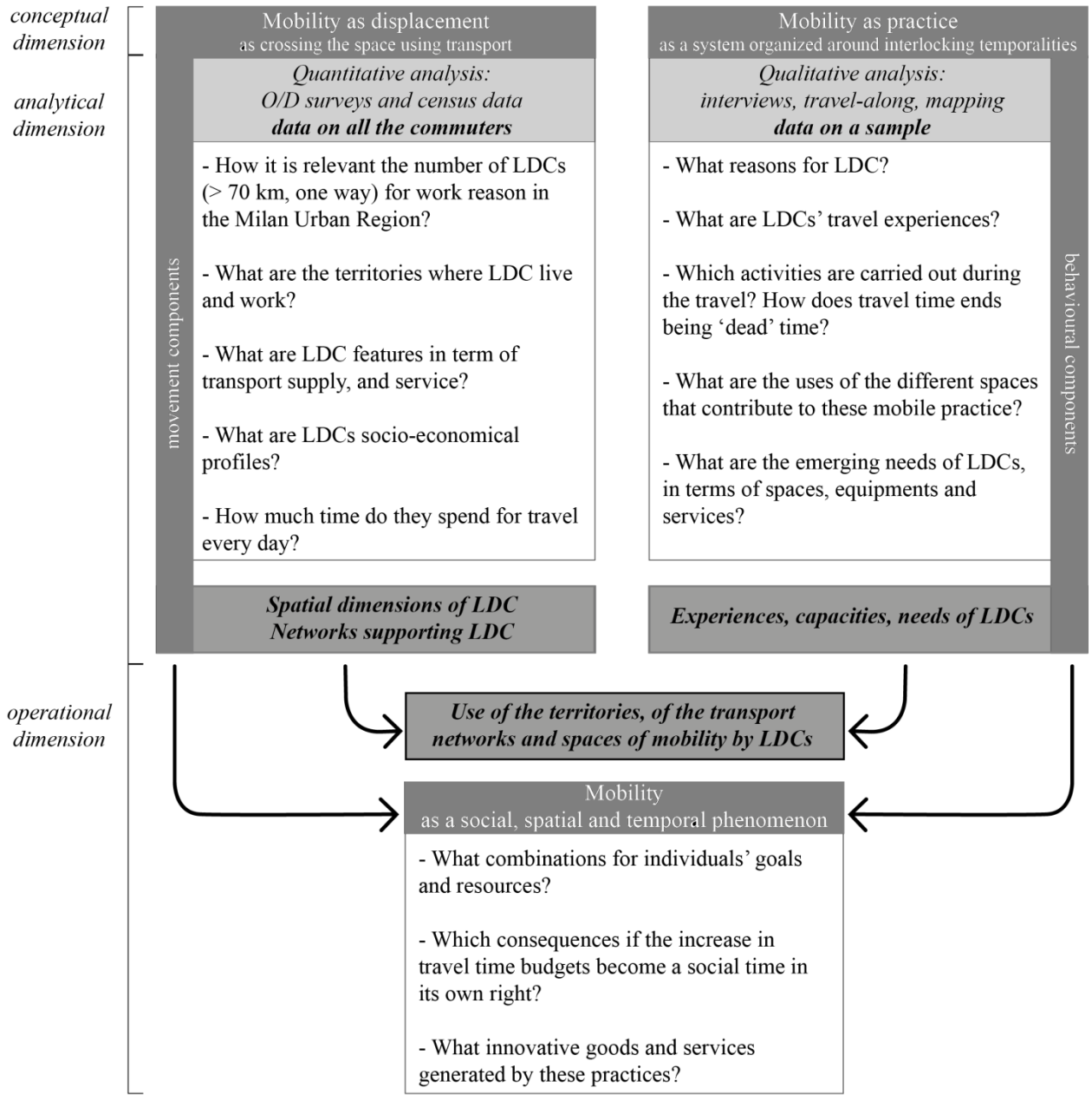

Fig. 1 Outlining a trespassing tactic to investigate Long Distance Commuting

Thanks to quantitative data sources[6], we investigated the importance of this form of mobility for the Milan Urban Region (in term of size and trends), which territories are most affected by this phenomenon (where commuters live and work), their features in terms of transport supply and services, the socio-economical profiles of commuters as well as how much time LDCs dedicate to travel every day (Pucci, 2019). Data shows an increase in the work-related displacements longer than 150 km by 43% from 2001 to 2011, yet they represent only 1% of total displacements in the Milan Urban Region[7]. The average long distance commuter is male (80%), aged 30-59, employed and commutes each day from his home to workplace using a private car. Car usage prevails despite the fact that LDCs are concentrated in urban centres of medium-large size and these municipalities are served by a railway station and distributed along the lines of the regional railway system (Figure 2). Results show that long-distance commuters travel primarily to reach their workplace, although in the last ten years this trend has begun to change in favour of business travel (meeting clients), in part due to the increase in freelance jobs following the 2008 economic crisis.

[6] The sources are the national census by Istat and the Lombardy O/D matrix. Istat's census (2001 – 2011) provides data also on commuters' flow for study and work reasons (O/D, modal share and time of displacement); O/D matrix by Regione Lombardia (2002-2014) is a survey led in 2002 and 2014, on all daily displacements (reasons, modal share, time of displacement, professional profile, gender, age).

[7] The LDCs were 14.834 in 2001 and 26.074 in 2011, out of 2.956.417 total work-related displacements in the Milan Urban Region.

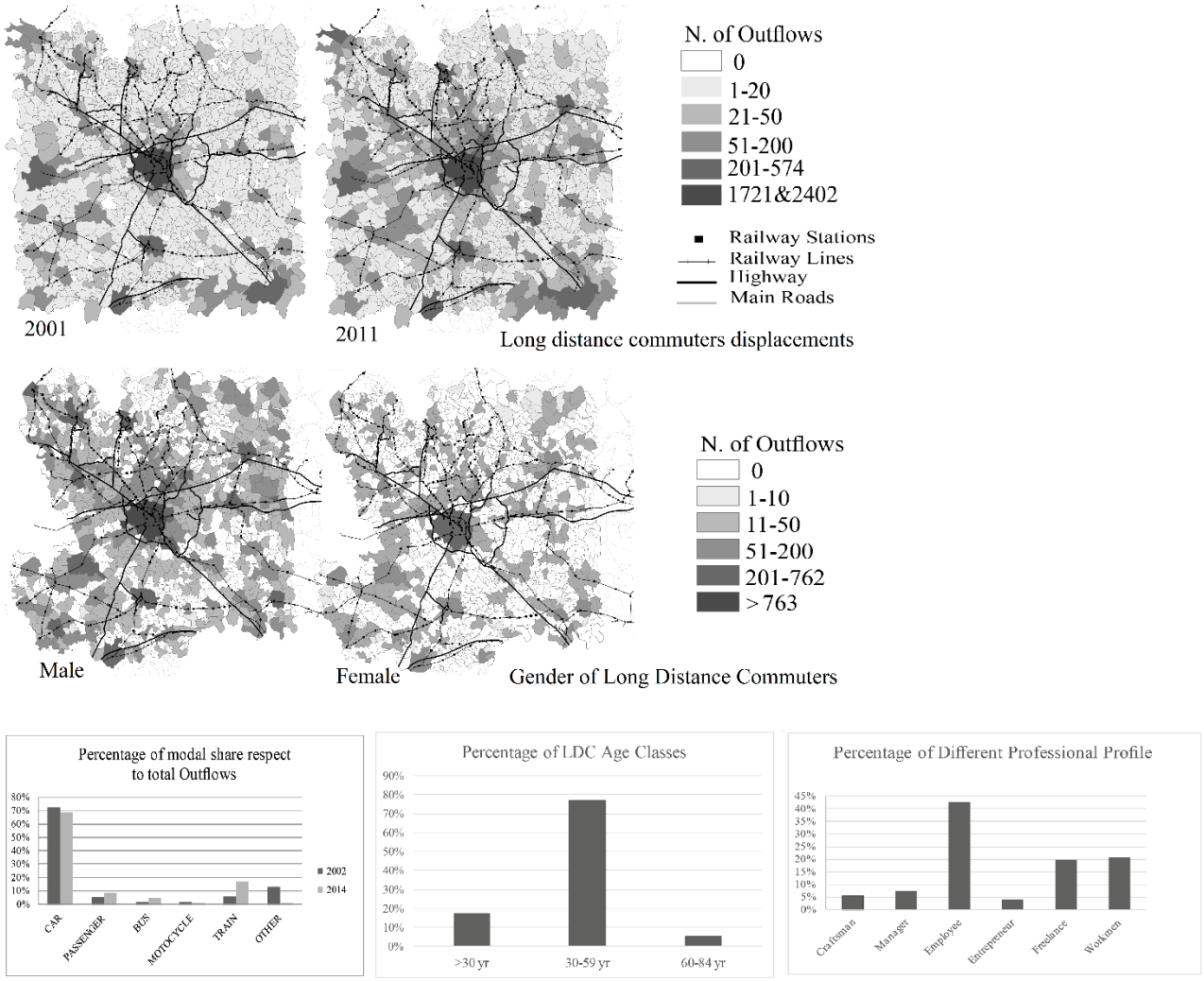

Fig. 2 The geographies of LDCs

Since LDC implies more articulated forms and temporalities than daily commuting, qualitative approaches are used to examine this travel experience to understand the reasons for being a long distance commuter, investigate the activities carried out during travel (making travel time an 'active' moment), analyse the uses of the different spaces that contribute to these mobile practices and highlight the emerging needs in term of spaces, equipment and services that are useful for these practices.

For these reasons, a sample of LDCs has been studied through an ethnographic approach based on semi-structured interviews, travel-along and mapping, as described by Vendemmia (2016). The sample, selected using the snowball technique, is characterized by people with mobility practices definable as long distance or commuting for an extended period of time. It is composed by 15 highly mobile persons, aged between 31 to 48, with differing social profiles. The sample is composed of 6 women and 9 men, of these 6 persons have children; 6 are married and 7 have a common low marriage. They are all highly educated, holding bachelor, master or PhD degrees. 6 currently have an open-ended contract, 2 are free-lance, 4 have a fixed term contract and 3 have a per-project contract. The analysis of the 15 individuals focused not only on their mobility practices, but also on their residential choices to explain the complex system of variables affecting their mobility practices.

The qualitative phase helps to detect reasons and profiles for the average LDC. The investigated subjects mentioned that their mobility practices originated mainly due to job reasons, but influenced many different domains of their lives. Due to their mobility practices, they have chosen a more intense daily commute to avoid migration or relocation.

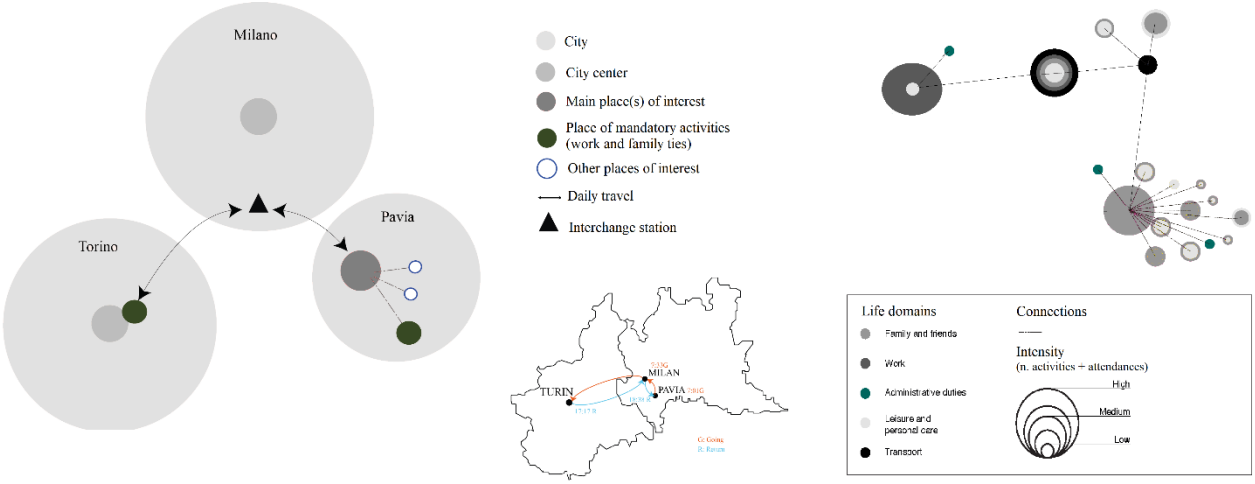

Fig. 3 Qualitative survey: synthetic map of everyday mobility of one LDC (our elaboration of Vendemmia, 2015)

Based on this approach, profiles of a LDC in Milan Urban Region may be defined considering:

- the reasons for commuting long distances. The LDC relates to the labour market conditions in terms of job insecurity and the need for a job or due to multi-localized jobs, professional aspirations and better working conditions;
- the differentiated relationships with LDCs' home spaces. These refer to social ties including friends, family, colleagues, household composition, housing ownership, preferences and norms;
- the activities carried out during the period of travel and the uses of the spaces of movement. These involve reading books and newspapers or chatting with friends, meeting colleagues and friends on the train or at the station and working on their laptop;
- the emerging needs raised by LDCs. These include minimizing time constraints, equipping transport spaces with comfortable chairs, electric plugs useful for short-term work, free Wi-Fi connection and meeting places and even equipping the train coach as a working space.

These profiles can be significant also to operationally tackle LDCs (figure 4): on the one hand, these findings highlight the main determinants of each profile (nonetheless, all the elements shown in the figure are relevant for LDCs); on the other hand, these also address the services offered in stations and inside vehicles, the organization and equipment of new spaces of mobility as well as interventions beyond infrastructure provisions.

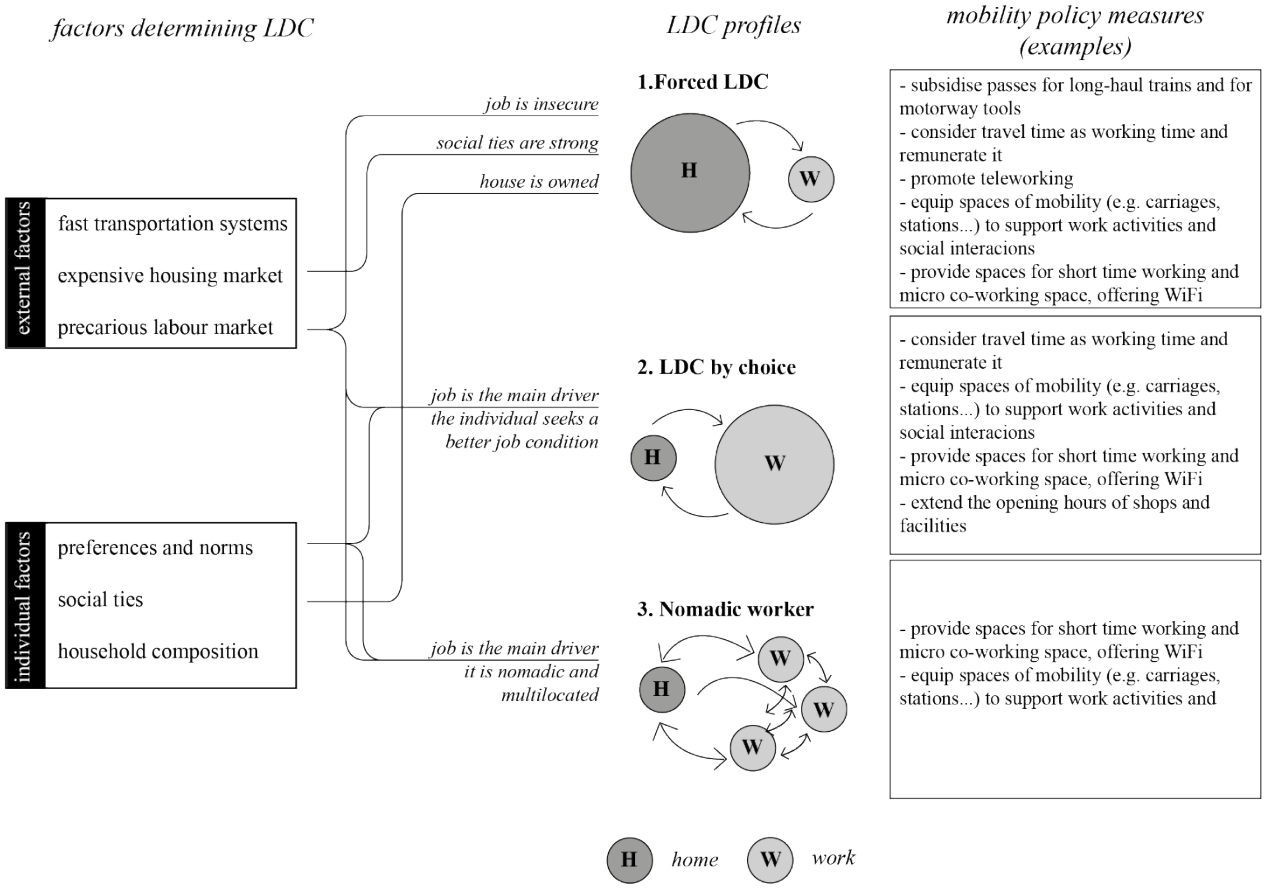

Fig. 4 Profiles of LDCs and possible relevant policy measures

4. Trespassing for mobilities: three directions

Emerging mobilities reveal the relevance of trespassing as a useful tactic for enhancing analytical and operational approaches to the already articulated contemporary mobilities. These mobilities are the product of specific needs, wants and constraints and in turn shape unprecedented spatial, temporal and material practices. Considering what LDCs in the Milan urban region disclose, trespassing is a valuable tactic for at least four reasons. First, it assists in discovering 'related' topics to LDC practices, including the effect of the evolution of the labour market on these mobility practices as well as the features of the territory, transport and communication networks that minimize physical distances. Second, it highlights the 'productivity' of travel as an activity in itself and not necessary as a derived demand as the increase in travel time budgets is no longer experienced as wasted time, but increasingly as a social time in its own right. Third, it overcomes an initial and stereotypical idea of LDCs as *élites* with mobile lives. The empirical evidence shows that often long daily travel is a necessary and unavoidable condition to meet economic and family needs and/or housing inequalities. Finally, trespassing can result in recommendations for more effective policy interventions, better able to assess emerging needs and initiatives in the transport market. Rather than from interventions in transport infrastructures, LDCs could benefit most from improvements to services and facilities that would support their work activities and social interactions.

While more traditional ways of analysing and tackling mobility are increasingly questioned by structural socio-economic changes, the proposed forms of trespassing suggest some directions for dealing with such transformations. To study mobility as a spatialized form of social interaction, trespassing offers a framework for re-conceptualising the object of study and a related analytical approach; however, this approach must be

seen as a multidirectional movement across transport geography, mobilities studies and transport planning. Given the pitfalls implied by the simple transfer of analytical tools and modes from one discipline to another (Hirschman, 1971, pp. 3–4), we intend to briefly discuss the conceptual, analytical and operational directions along which such trespassing may be developed.

Conceptualising mobility as a spatio-temporal practice and accessibility as the possibility to participate in activities. A shared definition of mobility as 'a system organized around interlocking social temporalities' implies considering three interrelated analytical dimensions, as defined by Kaufmann (2011): "the field of possibilities (the context), the aptitude for movement (motility), the movement (moving physically in space)." Differing combinations of these three elements constitute varied forms of mobility and immobility, expressed through multiple practices that involve variegated forms, spaces and subjects (Cresswell & Merriman, 2011), in a combinatory process that also generates forms of injustice in terms of access to urban inclusion and opportunities (Vecchio, 2018b).

In this framework, trespassing could be relevant for:

- Sharing a definition of mobilities as spatio-temporal practices. This definition can be relevant for identifying mobility profiles related to the evolution of the life-styles and labour market. Furthermore, it can be significant in defining an analytical framework that considers the conditions of access (the available transport supply), knowledge and skills (the capacities required to make use of the supply) and individuals' mobility projects (to be achieved making use of the supply) supporting these practices;
- Considering urban transport systems as contributors to individuals' participation in activities (Martens, 2017). Rather than exclusively examining land use or transport supply, a focus on accessibility allows researchers to consider how individuals engage in out-of-home activities, participate in social life and take part in activities that contribute to their well-being (C. Farrington, 2007; J. Farrington & Farrington, 2005).

Analysing mobilities as socio-spatio-temporal practice through existing and new approaches. These approaches can be crucial to detecting manifold mobility practices and their many features. The combination of established sources of information (such as census data and origin/destination surveys) and digital data (big data as automated, volunteered data deriving from mobile phone traffic or from tracking vehicles and passengers) provides new analytical opportunities, assisting in spotting the existence of specific forms of mobilities as well as recording the experiences of mobility (Järv et al., 2014; Pucci, Manfredini, & Tagliolato, 2015). Aggregate approaches can help to quantify the significance of a certain practice as well as estimating the spatial and temporal dimensions involved. The fine-grained resolution of big data allows instead a precise description of how each person utilizes the same form of mobility in different ways. Furthermore, other qualitative approaches are required to grasp the material and immaterial dimensions of such mobilities. For example, the features characterising the materiality of mobility (conveying for example different experiences of travel) or the opportunities and constraints that determine the choice of one specific form of mobility (such as individual and family needs, consolidated behaviours, eventual necessities to conciliate).

Within this framework, trespassing could be relevant for:

- Enhancing the contribution of big data. Newly available data, generically definable as 'big' (Kitchin, 2014) can improve the knowledge of mobility behaviours and their spatio-temporal variability as related to everyday activities. Despite coming from huge, but not necessarily representative samples, such pervasive data allows researchers to estimate the densities of use of the urban space (Pucci et al., 2015; Sevtsuk & Ratti, 2010) as well as different usages of it (Reades, Calabrese, Sevtsuk, & Ratti, 2007; Soto & Frías-Martínez, 2011), estimate the socio-professional profiles of populations using the

urban space (Ahas & Mark, 2005), and to monitor urban flows (Caceres, Wideberg, & Benitez, 2008; Fontaine & Smith, 2005);

- Involving people in the production of knowledge. Digital data sources can involve people in generating, elaborating and analysing data itself, making them unaware 'sensors' (Goodchild, 2007) or voluntary 'quantified travellers' (Jariyasunant et al., 2015). They provide an enhanced database of individual travel choices, creative management of new forms of everyday mobility (one example being van den Akker's [2014] 'chance orchestration'[8]) and unedited experimentations of innovative mobility policies;
- Allowing an alternative approach to analysis. Digital data also implies a potential epistemological change, since they highlight new phenomena and relevant correlations that do not derive from previous hypotheses that must be verified (Kitchin, 2014). This condition transforms the methodological approaches of empirical sciences, moving – even if with some risks (Vecchio, 2019) – from an "hypothetico-deductive method, driven by an incremental process of falsification of previous hypotheses" to "an inductive analysis at a scale never before possible"[9] (Rabari & Storper, 2015, p. 33).

Tackling and supporting emerging needs and forms of mobility. The emergence of manifold practices and the awareness on their multiple constitutive dimensions expand the range of needs with which mobility planning and policy deal. In fact, these account for mobilities that involve unprecedented spatial and temporal scales and imply significant material and immaterial dimensions. Furthermore, the recognition of the multiplicity of mobilities goes together with the growing limitations of institutional approaches addressing them, due to growingly scarce resources and rising mobility alternatives.

In this framework, trespassing could be relevant for:

- Defining which needs require priority for public interventions. The recognition of manifold forms of mobilities makes necessary to define priorities for intervention, that is, what practices should be primarily the target of devoted interventions and to what extent. These may be tackled by adopting different evaluative principles (Lucas, van Wee, & Maat, 2016; Martens, 2017; Pereira, Schwanen, & Banister, 2017) and consequently defining 'individualised' interventions, tailored according to the specific needs of their recipients (Bifulco, Bricocoli, & Monteleone, 2008). While decision makers pursuing social cohesion may adopt specific principles of transport justice (Martens, 2017), priority setting would more realistically result from political debate. The relevance of the issue has been demonstrated in the Milan Urban Region, where technicians and politicians from the regional government are currently debating the support of the regional government for LDCs by subsiding passes for long-haul trains and for motorway tolls;
- Promoting interventions other than infrastructure and service provision. Considering mobility as a practice that results from specific individual choices and tactics of conciliation, a wider set of measures becomes relevant. For example, LDCs demonstrate that they could benefit from interventions on the facilities available on the move (such as waiting halls and train carriages with the equipment required to work) or from measures facilitating the conciliation of individual and

[8] Van den Akker distinguishes two types of chance orchestration: network orchestration and software orchestration. "Network orchestration can be described as the adaptation of one's social network to one's needs, desires, and wishes. By including and excluding users constantly groom the quantitative and qualitative aspects of their social networks, (…). Software orchestration cab be descripted as the willingness of users to rely on the algorithms that filter the heterogeneous elements that make up chaotic urban environments" (van den Akker, 2014, pp. 42–43).

[9] "The idea of tacking back in an inductive direction - 'seeing what the data say' in any direction or possible pattern—represents a powerful rejection of what most science has been done in the past several hundred years" (Rabari & Storper, 2015, p. 33).

family needs (for example, extended opening hours of public offices). These measure would enhance the possibility to use travel time data in manifold ways – productive or not, while behavioural approaches (te Brömmelstroet, 2014) could contribute to nudging individual travel choices towards more sustainable practices. For these changes to take place, these measures would need to be more beneficial than just the provision of infrastructures or services;

- Recognizing the relevance of rising mobility alternatives. New actors, such as private companies and community enterprises, are developing initiatives to address the more complex mobility needs of people and goods by taking advantage of widespread technological innovations (Vecchio & Tricarico, 2019). Similarly, a community of practices may also generate unprecedented mobility services and behaviours (Vecchio, 2018a). In doing so, their presence may address specific needs but also originate clashes with established normative and planning frameworks.

These conceptual, analytical and operational directions can structure trespassing as a multidirectional movement across transport geography, mobilities studies and transport planning. The first two disciplines already show reciprocal forms of interaction; these can be enhanced through a more intense exchange. For example, transport geography could focus on the particularities that may be missed by current, big data-based approaches looking at the 'big picture' of mobility trends (Schwanen, 2017) while mobilities studies could, on the contrary, deal more with the wider background as portrayed by new sources and forms of knowledge. This reciprocal disciplinary enrichment should be articulated in a verifiable, communicable and replicable toolkit to be included within the established analytical and operational set of tools. Trespassing in fact should involve also a third front, that of transport planning, by having planners recognize the heuristic potential generated by the 'mobilities turn' and, on the other hand, through mobilities scholars and geographers addressing planning practice with transferrable approaches. Considering planning as a practice that affects the way we live implies that planners should know how to define problems in the public domain and how to acquire the new knowledge necessary to do so (Friedmann, 1989). New mobilities-related concepts, analytical tools, results and operational suggestions can meet both of these requirements. In this sense, transport geography would provide descriptions *of* established and emerging mobilities intended *for* orienting the definition of a collective mobility problem and the alternative operational avenues to address it. Their richness and effectiveness depend also on their ability to trespass disciplinary borders and bring together different forms of knowledge, orienting them towards action in the public domain. Nonetheless, such generic calls for trespassing and involving (also) transport planning require considering the specificities of contexts with different scholarly and planning traditions.

5. Conclusions

Trespassing can contribute to enhancing the way we understand and tackle manifold forms of mobility. The huge contribution of mobilities studies is already spreading to research in transport geography and will hopefully enrich the sensitivity of mainstream transport planning approaches, which are still primarily focused on the concept of accommodating individuals' travel in the most efficient way rather than taking advantage of developments across multiple social sciences. By now, mobilities studies has become an established disciplinary field and increasingly vocal in its criticism of the limited effectiveness of traditional transport planning approaches. Nonetheless, the reciprocal interactions among transport geography, mobilities studies and transport planning need to be explored further, especially from an operational perspective. As proposed by this article, trespassing is intended as a preliminary attempt towards the reciprocal integration between disciplinary fields, which may eventually assume more institutionalized and discipline-constituting forms. In this sense, further explorations of trespassing are necessary.

The approach proposed for analysing LDCs suggests not just the need to combine quantitative and qualitative methodologies, but also proposes a way to combine them and to selectively use the latter in relation to

specific conditions. In case the conditions for an interdisciplinary approach are lacking, a trespassing tactic allows researchers to combine different perspectives on the same research object, to re-formulate the approach and maintain coherence across intersecting disciplines. In doing so, trespassing is not finalized to match necessarily quantitative with qualitative data or to propose combinations of quantitative and qualitative methods as in the case of 'mixed methods'. Rather, it represents a useful attitude to facilitate the ways in which different disciplines deal with the same research object.

Based on this, trespassing can be a cognitive attitude for contaminating approaches, able to analyse mobility not only as the aggregate displacement of people, but also considering individuals' preferences, needs, habits, behaviors. Less straightforward is the contribution that trespassing may make to planning and policy processes. The proposed approach may not be extensively used for depicting all current mobility trends. Rather, it could be suitable for in-depth analyses of specific forms of mobilities whose spatio-temporal complexity cannot be grasped solely by quantitative analyses of flows, thereby enriching the technical-rational model that still influences mobility policymaking (Marsden & Reardon, 2017). Nonetheless, trespassing raises issues of feasibility (what subjects should be responsible for it, given the persisting reliance on quantitative forms of knowledge) and effectiveness (how to differently inflect the approach according to the different stages of a policymaking cycle). The reflection proposed here intends thus to pave the way towards more complex analytical and operational approaches to mobility, which may in turn result in more effective strategies for addressing mobile lives. As Hirschman himself stated (1984, p. 11), "something is sometimes to be gained by making things more complicated".

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