Chronotopic exploration of a Parisian landscape

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1   Introduction

Even if already present in urban disciplines, spatiotemporal approaches to the analysis of places and inhabited spaces have been explicitly developed only since the 1970s. The term chronotope, deriving from theories of the novel (Bakhtine, 1978), was imported into urbanism in the 1990s as a notion useful for exploring the articulation between space and time. The research project "Chronotopic exploration of a Parisian landscape", conducted as part of the Paris 2030 programme,[1] seeks to clarify this notion by exploring its genealogy in different disciplines as well as in our previous researches. The exploration of a "slice" of Paris will allow us to redefine this notion in a specific context, in an attempt to answer the following question: *How is the experience of time shaped in a city like Paris?*

1.1   Towards a chronotopic matrix

A first descriptive matrix of the chronotope was defined in the mid-90s by researchers at the Faculty of Architecture of the Politecnico di Milano, on the initiative of Professor Sandra Bonfiglioli (1997). This matrix sought to understand the combined physical and social

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[1] This research, begun in January 2015, is financed by the city of Paris. It is conducted by a team of four researchers from the Laboratoire Architecture Anthropologie/Ensaplv - LAVUE - UMR CNRS 7218.

dimensions of inhabited areas through a temporal data set. A chronotopic approach enabled researchers to uncover and measure the organisational aspects that characterise different parts of an area according to their activities. Their timetables and calendars build rhythms of presence and co-presence among residents and visitors. This distinction, proposed by the sociologist Guido Martinotti (1993), characterises various urban populations according to their different temporal regimes, which together compose the temporary co-habitations of residents, commuters, city-users, metropolitan consumers and metropolitan businessmen.

The chronotopic approach developed by the Politecnico di Milano proposes also to consider places as historical constructions, recognising not only elements of historical stratification but also taking into consideration a place's history while trying to bring out the contemporary significations of elements that are meaningful in terms of transmission and heritage. Finally, in a last level of interpretation, not unconnected to the preceding ones, this approach includes in the definition of chronotopic areas the aspect of mobility through the recognition of types based on accessibility and practices of displacement in different areas.

This descriptive matrix is meant to be multi-scalar in spatial and temporal terms. The daily life of an area is broken down according to different periods—day, week and year—in order to grasp the rhythms linked to cycles and seasonality belonging to specific practices of the places. An historical perspective thickens this understanding by recognising morphological, functional and symbolic permanencies. This highlights the plasticity of the spatialised practices that are reinterpreted in inherited urban forms that are "frozen" in the "urban matter" (streets, infrastructure, allotments and buildings).

This approach was developed through a process that was both theoretical and experimental, rooted in temporal politics and enriched by questions coming from a range of disciplines such as sociology, urbanism, geography, history, but also physics, astrophysics and mathematics, notably applied to the issue of mobility.

1.2 Space-time representations

Today these experiments can be reframed within a tradition based especially on the works of: 1) the Lund school of time geography—of which Torsten Hägerstrand (1970) was one of the founders, introducing the issue of spatialised individual time schedules into geographical analysis; 2) Kevin Lynch's (1972) criticism of the modern city; and 3) Henry Lefebvre's (1992) urban *rhythmanalysis* project. The word chronotope is not used by any of these researchers,

even though they were all trying to overcome the separation between space and time and to understand their inter-articulation—whether through the organisation of individual lives, for Hägerstrand, the expression of time through architecture, for Lynch,[2] or through understanding of urban rhythms, for Lefebvre.[3]

Looking at these other schools of thought, we can identify different approaches to the representation of time in space (Guez et Mareggi, 1997; Van Schaick, 2011).

A first approach, developed by the research of the Lund school, concerns the possibility of representing "temporal geographies" showing the evolution of individual daily paths in axonometric projection using the X and Y axes to represent space and the Z axis to represent time (Hägerstrand, 1970).

A second group of representations considers distance as the time necessary to link two points in space. These aim to show how geographical proximity is deformed according to travel time (cf. Cauvin, 1994) and to represent this deformation through geometrical transformations such as anamorphosis or isochronic curves of territorial points accessibility depending on time.

The third approach, developed in the research of the Politecnico di Milano, highlights morphological research linking urban functional analysis, timetables and calendars of activities and services, intensity of uses and user movements, and historical layers of city construction. The chronotopes produced by this approach implies a representation based on the indexation of different types of urban fabric articulating these complex parameters. A prototype of this system has been created for the city of Pesaro as part of the mapping of the city's times and operating hours (Bonfiglioli, Zedda, 1999).

The last approach, developed by the Politecnico di Milano and our research laboratory, concerns the study of a city's street level times and rhythms. This approach focuses on spatial representation in terms of "on/off" (open and closed to public) and in terms of the intensity of use over 24-hour, weekly and yearly periods. This

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[2] "This book deals with the evidence of time which is embodied in the physical world, how those external signals fit (or fail to fit) our internal experience, and how that inside-to-outside relationship might become a life-enhancing one. The discussion ranges from historical preservation to the forms of transition, futurism, time signals, the aesthetic of time, biological rhythm, time perception, disaster, renewal, and revolution" (Lynch, 1972: 1).

[3] "Le rythmanaliste fait appel à tous ses sens. Il se sert, comme repères, de sa respiration, de la circulation de son sang et des battements de son cœur, du débit de sa parole. […] Sans omettre, bien entendu, le spatial et les lieux, il se rend plus sensible aux temps qu'aux espaces" (Lefebvre, 1992: 33-35).

information can be represented using axonometric projections similar to those of the Lund school (showing simultaneously the timetables of various activities), or through "animated maps" showing the accessible spaces evolving over time (by the hour, day or month) (Guez, Stabilini, Zedda, 2000).

Image 1. *Example of the Politecnico di Milano approach: map of the markets, fairs, auctions, axonometric projection of year events (Z axe represents a year on a day unit), Italy (source Guez, Stabilini, 2000).*
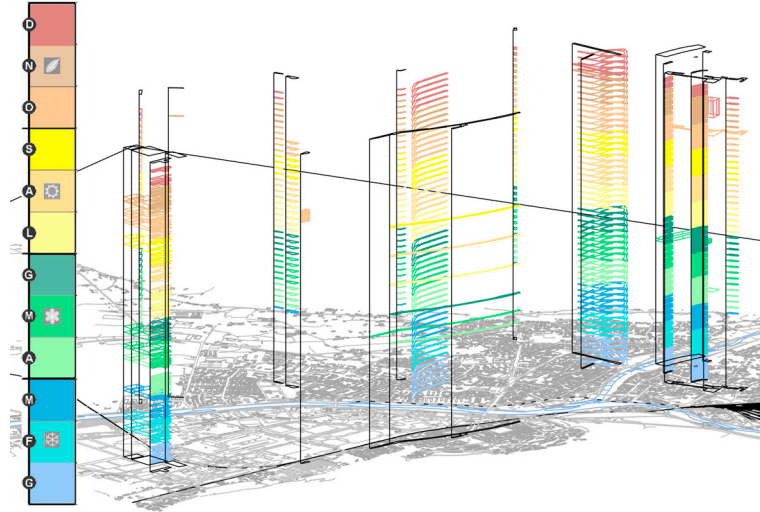
2   An anthropological approach to the chronotope

Through those pioneering studies we see the appearance of some fundamental issues that our ongoing research proposes to question. Those issues can be organised into four groups.

The first group concerns the spatial and temporal scales on which our comprehension of the contemporary city can be focused. This first issue raises some questions about the limits of and relations between disciplines: some working on extended lapses of time, others on daily time, some dealing with large areas, others focusing on more limited spaces. The multidisciplinary approach taken by our laboratory and our research team allows us to leave this question open, trying not to predefine those limits. Working at the intersection of anthropology and architecture, in fact, challenges us to question temporalities ranging from daily experience of inhabited spaces to horizons of past and future. The objective of the anthropological approach is, in this sense, to understand how we experience time in urban contexts.

The second group of issues concerns the data that enables us to characterise the time schedules of areas and places. According to the

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chronotopic matrix developed by the Politecnico di Milano at the end of 90s, the data necessary for determining qualitative and quantitative indicators cannot be found in any existing institutional database[4]. This suggests that those databases have to be built, collecting timetables and calendars in order to determine the accessibility and permeability of spaces to the public. Our ambition is to cross-reference these temporal data with the experience of time lived by inhabitants in their different practices of urban spaces. This approach focuses on the combining of individual experience and temporal data analysis to identify the "events" that could begin to build a chronotopic characterisation of the city.

The third group is related to the representation of chronotopic entities. Thus far, there is no shared graphical codification—as there is for research in music and dance, particularly in Laban's work (Louppe and al., 1994)—even though a large number of prototypes have been explored. The analysis of temporal partitions of inhabited places can be done by different formats going from maps, to graphics, to animated chrono-maps. The interest in working with computerised databases is precisely to permit different forms of output. For our research we have chosen to use existing GIS[5] databases associated with timetable and calendar data. If these documents are just a first step in representation and interpretation and need to be accompanied by qualitative analysis, they are extremely powerful tools that can help us to identify the different forms of temporal organisation in the studied areas.

The final group of issues touches on the question of transformation in a broad sense: not only concerning the observation of existing configurations and their historical thickness, but also as an analysis of horizons of future urban and architectural projects that can influence chronotopic characteristics. In this research, we aim to understand how a city like Paris produces social and spatial arrangements through time and the corresponding issues of contemporary urban life.

2.1 The methodological setting

The specificity of our approach is linked, then, to the possibility of putting a temporal study to the test of an anthropological analysis in order to bring together representations of temporalities in space and

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[4] It is interesting to note that, since 2005, several companies have started to build some internet databases of opening hours for shops and urban services, obtained through telephone surveys and collaborative surveys on virtual platforms. Those databases are meant to offer services to the population, but they have not yet been used to generate maps of activities accessible in the city at a given moment, nor have they been tapped by urban services and research units.

[5] Geographical Information System.

the temporal perceptions of inhabitants in that space. How does the temporal organisation of space contribute to the experience of a place? Is there a correlation between cycles and rhythms constructed through quantitative research and those that are experienced by those living the city?

The project "Chronotopic exploration of a Parisian landscape" seeks to investigate Paris as a city that—with its specificities, density and the complexity of its recent transformations—allows us to demonstrate the richness and heuristic potential of an acute analysis of urban spatiotemporal arrangements. The research focuses on a north-south "slice" of Paris, 13 km long and 1.3 km wide. This slice is situated in the eastern part of the city, an area that has experienced some of the major urban transformations of the last twenty years. The size of this slice is determined by the use of a geographical grid composed of squares of 1.69 km^2 that the LAA uses as a basis for its ethnographic survey. As argued by Alessia de Biase, the "dimension of this grid is never fixed, unlike those projected on the whole globe of the world [...] in Paris, this network measures 1.3 km and represents the distance that, as a Parisian, is considered close, 'next door', and accessible on foot" (de Biase, 2014: 106-107). The definition of the "Parisian step" is based on the fact that, generally, in 1.69 km^2 it is possible to find at least two metro stations generating a sentiment of accessibility.

The spatiotemporal characteristics of the typologies of urban fabric included in this slice are intimately linked to the functions that they contain. These functions contribute to building rhythms of uses of buildings and public spaces that can change many times during the day and night, during the week and through the seasons. Some particular moments overlay these regular rhythms, which might consist, for instance, in organised events whose calendar imposes periods of strong intensity in contrast with the surrounding daily time. After a survey of all those functions and events and of the timetables and calendars that regulate accessibility, the study will be complemented with an ethnographic survey. This project has, then, two research objectives: 1) to demonstrate and analyse the complex spatiotemporal arrangements of Parisian public spaces in order to understand their articulation, their periodic variations and the urban issues that they produce; and, 2) to consolidate the conceptual and methodological tools of a chronotopic approach.

Image 2. *Perimeter of the research: survey grid and area of ethnographic survey.*

In a first phase, we develop a systematic survey and gather information from existing databases on opening hours and calendars of the street level spaces and activities with different kinds of accessibility to the public. This choice corresponds to a first test of the articulation of different scales of urban life. Even though we are interested in open public space, we have decided to enlarge our enquiry from the public domain to spaces that are more widely accessible to the public and which participate in the social dynamic of daily life.

Our objective is to take into account the permeability (whether real, imagined or virtual) of the city street level as an element potentially charged with meaning for our comprehension of urban experience. The plan of Rome realised by the architect Giambattista Nolli in 1748[6] is for us a reference for understanding the limits of this potential public space qualified by different degrees of accessibility in the extension of the public domain.

The size of our case study permits us to show the various "pulsations" that characterise different areas depending on the nature and intensity of activity. Our second goal is to confront this "horizontal" organisation of the city with the "verticality" of urban space and its functional distribution. We will then cross-reference the

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[6] The specificity of this plan, called *The new Rome's topography*, was not only to show for the first time all the gardens and courtyards of remarkable private spaces (noble palaces and monasteries for instance), but also to represent all the spaces accessible to the public (like churches) as "empty", that is, drawing their interiors as part of the public space of the streets.

data from our survey with the data (already produced by the city of Paris) about residence and activity distribution in buildings in order to make our analysis more precise.

Image 3. *Left, detail of the research area. Right, map of "extended" public space in the same area.*

       Equipments, free access spaces

       Economic transaction spaces and services by appointment

       Specialised accessible spaces

       Closed-to-the-public spaces

In a second phase of research, the quantitative analysis will be put to the test of fieldwork through a series of interviews with inhabitants of three squares of our survey grid (those with the most complete database). This interest will be defined according to the presence of temporal contrasts between day/night, week and year. This interpretative work of quantitative data analysis will permit us to determine an initial classification of patterns that could help us to define chronotopes together with the ethnological analysis.

The methodological establishment of the ethnographic field poses firstly the question of the quantity or interlocutors and the choice of criteria. This choice is clearly linked to the objective of the research. The logic of the fieldwork and the experience gained by our research laboratory over the last ten years lead us to privilege the significance of interlocutors over their statistical representativeness. The latter is not ignored but it is limited to the creation of a balanced panel based on classical sociological criteria (age, sex, place of work/residence, etc.). Representativeness is a function of a set of quantitative factors, significance is instead intimately qualitative because it is open to multiple ways of living, perceiving, and practicing.

Working with a limited number of interlocutors does not imply any reduction in the elements of knowledge needed to answer the

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questions defined by the research. On the contrary, the intensity of the ethnographic relationship established between researchers and interlocutors can bring to light the specific "expertise" and "experience" of the studied population. This approach will make it possible to target different typologies of time experiences. The categories that define the significance of those experiences are linked to the diversity of temporal situations faced in urban life: populations with different working hours (standard, out-of-sync, night work, seasonal work, third-shift work), non-working populations (children, unemployed and retired persons), "temporal communities" characterised by ritual practices that set the tempos of public space.

3   Conclusion

The cross-cutting analysis of this research is intended to open up the possibility of a deep understanding of temporal characterisations of the chosen area and to measure their specificity and importance in the lives of Parisian populations; but also to identify and understand their "temporal compromises" and the role they play in social life and city planning.

In parallel, this research proposes to produce, through a series of meetings with Paris city officials (*bureau des temps*, roads department, public and green spaces department, mobility services, public retail policy makers), a state of the art of current temporal policies. This will entail understanding the modes of management and governance of public spaces and services that the city of Paris provides in relation to the variety of individual and collective ways of life. It is our hope that this research will demonstrate the possibilities of a chronotopic approach for urban practices and polices.

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