

INSIGHTS ON THE SPATIAL CONFIGURATION OF COLLECTIVE SPACES WITHIN FORMING DYNAMICS

The Relation Between Infrastructure and Urban Transformation in *Plaça de les Glòries Catalanes*

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ABSTRACT

The research seeks to produce insights on the spatial configuration of collective spaces where large scale infrastructure propels urban transformation. Focusing on the meaning, character and programmatic qualities of urban spaces in transformation as outcomes of fluctuating processes, it deals with complex spatial forming dynamics of urban streetscapes: the non-traditional conjugations of spaces, boundaries and territories. These spaces foster unexpected notions of proximity, territoriality, permeability and critical boundaries, investigated by means of specific parameters manifesting and interacting in time. This can help upgrade the design of architecture and urban projects to innovative techno-cultural practices and improve their integration in the urban fabric; urgent matter within the hyper-complex conditions of contemporary urban realities. The case of *Plaça de les Glòries Catalanes* in Barcelona, where a car-oriented open-space based on a variety of spatial manifestations turns into a formalized urban centrality, is used to unveil the complex convergence of streetscapes and urban infrastructures in contemporary urban transformations.

Key words

Urban streetscapes, critical boundaries, fluctuant territoriality, morphogenesis.

1. THEME AND HYPOTHESIS

The research seeks to produce new insights on the spatial configuration of collective spaces where large scale infrastructure propels urban transformation. The investigation, related to the built environment, focuses on the meaning, character and programmatic qualities of urban spaces in transformation as outcomes of processes that are constantly fluctuating as a result of infrastructure construction. Aiming to overcome dialectic approaches on (in)formality still embracing their attributes¹, it studies the complex spatial forming dynamics of urban streetscapes², namely the changing production of nontraditional conjugations of spaces, critical boundaries and territories.

Collective space -as the category of shared urban spaces disregarding property structures (De Solà-Morales, 1998) and tied to the city as part of an ever changing transformation and experience, raises many potentialities, contradictions and conflicts and by understanding its implications, meanings and characters, we can foster new ways of conceiving urban realities. Collective spaces are not restricted to certain morphologies or ownerships, but defined by certain qualities (Scheerlinck, 2012-2015): they are co-inhabited by different actors that relate to each other and to space itself in non-hierarchical cultural-driven manners (Hillier & Hanson, 1984; García Canclini, 1999; Lefebvre, 1974; Latour, 2005; Foucault, 2004 [1977-1978]). Within this frame, unexpected configurations of proximity and territoriality, permeability and critical boundaries emerge. These configurations will be investigated by means of specific parameters, measuring the levels in which material, domain, use, infrastructural edges and interfaces manifest in time; and mapping the ways in which these elements are exposed, shared, and separated materially, visually and symbolically, along with the in-between gradients, overlapping and autonomous states.

Particular urban settings, such as areas of programmatic vacancy, infrastructure nodes or metropolitan peripheries, put in evidence the tensions and conflicts inherent to the current production of the city, and can ultimately act as intermittent buffer zones capable of absorbing contradictory forces, as in many cases in western cities. These tensions get stressed when different spheres, namely the state apparatus, economic market actors, societal groups and cultural relations (Arroyo, 2011) deploy strategies for territorial demarcation following particular logics. Some of these logics are considered stable or institutionalized, among them, urban structures (fabric, grid, axes, plot layouts), infrastructures (roads, railways), urban codes, buildings aggregates, public facilities and projects. They have been the subjects of study of urbanists for centuries, however, they are now acquiring new connotations that are far from being fully understood, due to the high level of complexity in which they are produced and manifested. The current debate on more sustainable cities' models and footprints exposes this. Others are rather emergent, unstable, spontaneous, and incremental; they include appropriation and initiatives, constant negotiations, building transformations, temporary structures and uses. They also generate material and symbolic outcomes, and furthermore, they have the capacity to resignify the traditional elements by becoming strong urban forces. This PhD-research is not interested in confronting them as antithesis, calling them formal or informal (depending on their level of legality, coherence or establishment), but in studying them in the hybridized³ manners in which they actually exist, aiming to articulate a discourse on the way we transform and develop cities now and in future terms. In this sense, the conceptual construction "Forming Collective Streetscapes" is used to gather the aforementioned issues.

This is pursued by focusing on urban space and the way it changes in time. In particular, by looking at the forming dynamics, specifically where infrastructure (Shannon & Smets, 2009; Smets, 2001; Lloyd & Stoll, 2010) meets the urban fabric; on the manner in which the fluctuant spatial elements manifest, based on different parameters that vary in time, in non-hierarchized morphogenetic processes. The generation of insights on the spatial configurations collective spaces within forming dynamics in contemporary urban realities has not yet been addressed from this multileveled conceptual, methodological and strategic point of view.

¹ See Angéllil & Hehl 2012, of which the author of this project is a co-author and worked deeply on the relationship between formal and informal logics.

² See Scheerlinck's Streetscape Territories Project, KU Leuven.

³ Hybrids are organisms that operate at multiple levels of domain, complexity and intensity. They can only be understood by extending their networks into wider directions and by moving around them. (Latour, 2005).

The initial hypothesis is that understanding the spatial configuration of collective spaces when taking into account the forming dynamics of production of space in time, has intrinsic capacities to upgrade the design of architecture and urban projects to innovative techno-cultural practices in a broad spectrum of conceptual, and methodological manners. This is particularly urgent due to the novel hyper-complex conditions of contemporary urban realities verified from a theoretical and experiential point of view (De Landa, 2000; Deleuze & Derrida, 1987; among others). These conditions confront designers of the built space (architects, urban designers and urbanists) with the obsolescence of their resources that still respond to traditional conceptions of cities in balance, or at most pursuing a static state of perfection. The primary role that the urbanized world plays in terms of social and environmental (e)quality, and the critical stage that it is now reaching (as widely claimed by different agencies in all fields, including UN⁴), demand designers to adapt and upgrade the ways they understand and intervene in urban contexts, if they intent to keep a relevant position in the configuration of the built environment (especially after decades of design experimentation that struggles to endure in the current post-crisis situation both in terms of internal coherence and external credibility).

2. RESEARCH QUESTIONS

The objective of this PhD-research is to produce new insights on the way we transform and develop collective spaces in contemporary cities, by addressing the following research questions:

- Are the settings in which urban tensions get stressed, platforms for understanding non-traditional conjugations of spaces, critical boundaries and territories, relating to streetscapes and infrastructures in contemporary urban transformation processes? With a special focus on cases in which the qualities of collective spaces are overwritten, can these procedures be altered?
- Is time a key factor to tackle the notion of collective spaces as spaces in change? Is it by monitoring the actual transformation of space from this perspective that we can generate a new tool set and a discourse on the way to transform/develop collective space in contemporary western cities?
- What are the spatial meanings, characters, qualities and forming dynamics that collective spaces acquire in processes lead by infrastructures at a large scale when meeting urban fabrics? Are the proposed parameters an innovative way of understanding urban configurations?
- Is Forming Collective Streetscapes a suitable conceptual construction to articulate these elements? How and in what sense? What are the explorative methods, mapping techniques, analytical and design resources based on Forming Collective Streetscapes that bring up capacities to upgrade the design of architecture and urban projects?

3. METHODOLOGY

Framed in the Research Project "Streetscapes and Urban Infrastructure: Collective Spaces, Formal and Informal Processes of Urban Transformation", directed by Prof. Dr. Kris Scheerlinck and linked to the Research Group "Urban Projects, Collective Spaces and Local Identities" (KU Leuven, Department of Architecture) of Prof. Dr. Yves Schoonjans and Prof. Dr. Kris Scheerlinck, this PhD-research was launched in mid-2015; the starting point is the sustainable interactive regeneration and development of new urban strategies, in combination with the territorial organization of streetscapes, i.e. the interface between buildings and streets and how their inhabitants give meaning to them. Urban space understood as a discontinuous collective space, where infrastructure in pivotal scale conditions performs actively is studied from the intermediate-scale and a non-exclusive formal perspective. The project aims at putting these complex variables in deep interrelation in order to generate integral insights on collective spaces. For this, an extended literature and conceptual review is needed, which will be done in the *Methodological Framework* section. The review will incorporate conceptual elements into a matrix that help organizing them in accordance to the historical moment in which they were developed, along with the strategic methods that they generate and feed.

Constantly referring back to the conceptual methodological frame, and simultaneously checking and retrofitting it, the PhD-research uses the *Plaça de les Glòries Catalanes* (in Barcelona, Spain –shortly

⁴ As expressed in the *2014 Revision of World Urbanization Prospects* (<http://esa.un.org/unpd/wup>)

Glòries) as main case-study to deploy this approach aiming to unveil the complex convergence of streetscapes and urban infrastructures that take place in contemporary transformations. This infrastructure-based open space once exposing a variety of logics, processes and spatial configurations linked to a long-lasting complex transformation process is now being turned into an urban complex that simplifies, thus overwriting that variety. Situated at the fringe of 4 officially determined administrative districts (*barrios*), *Glòries*' first aspirational character was determined by Cerdà⁵, when conceiving it as 'the centre' of his extension plan, meeting point of prominent urban axes (*Avinguda Diagonal*, *Gran Via de les Corts Catalanes* and *Avinguda Meridiana*), which was actually to be achieved via an intricate morphological alteration of the plan's morphological methods triggered by the infrastructural preexistences (train lines). The complexity of the site manifested repeatedly along history, during moments of diverse interest by different actors. As a consequence the area was inconsistently developed and due to its actual residual character, it became the prime destination for infrastructural elements that in turn changed their significance. Furthermore, the history of constant redefinition and disarticulated interventions in a long period of time empowered the emergence of a vivid collective urban streetscape, full of rich spatial configurations and a great variety of morphological and programmatic manifestations. Currently, the undergoing transformation process includes the relocation of major infrastructural elements in underground levels (the construction of a tunnel) and the reclaim of open spaces for defined urban uses to be achieved by means of a new metropolitan park, a series of dominant architectural objects, and the programmatic saturation (that paradoxically responds to long standing demands of public facilities that find room at the back-side of the adjacent districts). This case gathers what is considered to be the most advanced repertoire for urban transformations methods, and it exhibits how it gets weakened when going through a spatio-material simplification process that dismisses mismatching existent qualities and discourses, leaving little space to alternative urban processes. On top of that, the process has been properly documented in isolated stages (key moments are usually celebrated), and nowadays the amount of sources and studies made on this area are overwhelming. However, paradoxically, the case has never been studied from a simultaneous diachronic/synchronic perspective that considers a broader time frame and looks at the transitions and spatial outcomes in the in-between moments for other purposes than the (re)definition of the area itself. Including this glance, apart for avoiding any pretention of adding to the local *Glòries* debate⁶, nor restricting the PhD-research to one single case study; enables us to address the fluctuations of the spatial configurations in an innovative way, ultimately offering elements to articulate a discourse for an alternative way of conceiving urban elements, based on a novel relation between infrastructure and collective spaces in a broader sense.

During the research process, this research will attempt to move from analytical approaches to strategic explorations and ultimately to explorative projective enquiries, by including the following methodological stages: 1. Methodological Framework and Theoretical Position, 2. Case-Study and Intensity Timeline, 3. Deploying Existent Explorative Methods, 4. Developing Forming Collective Streetscapes, a New Explorative Method?, 5. Forming Collective Streetscapes, as Conceptual and Design Theory Input.

4. DEVELOPMENT, RESULTS, AND DISCUSSION

4.1 Methodological Framework and Theoretical Position

A conceptual review is aimed at understanding the connotations of the terms used in this PhD-research and ultimately push them further in theoretical and practical terms. The focus is to clarify what is implicated in **spatial configuration of collective spaces within forming dynamics**, in the frame⁷ of **the relation between infrastructure and urban transformation**, and to generate insights potentially articulated by the conceptual construction *forming collective streetscapes*.

When talking about notions such as configurations or forming, the term **morphogenesis** becomes an important preliminary reference concept, because it refers to the genesis or creation of form. This term, coined in biological studies has been resignified by several social scientist (De Landa, 2000; Deleuze & Derrida, 1987) to characterize creation processes in general applied to social realities, of which urban reality constitutes the ultimate manifestation. In studies related to architecture and urbanism, the term was

⁵ Ildefons Cerdà's extension plan, Barcelona, 1859.

⁶ Nevertheless, some precautions need to be taken in order to avoid mistakes or naive observations. For this, a minimum of diverse viewpoints will be included, by means of interviews to relevant actors, potentially including bottom-up and top-down perspectives.

⁷ Considering Latour's "mollusk" [flexible] frame, where concepts related to distances and gaps between the components, scale, boundaries, in-betweens, tops or bottoms, get replaced by new characters and attributes (intensity, flows), entities (actants) and concerns (attributions, distributions, connections, associations and transformations) (Latour, 2005).

disseminated by digital-oriented positions (from theoretical constructions to parametric schools)⁸, but it is not restricted to that aspect only. Philosophical studies are achieving great improvement in addressing social phenomena in post-structuralist ways which appears useful for the domain of urban and architectural theorists and designers who find systemic approaches obsolete in the complexity of contemporary processes, but which implications are still to be tested. The purpose of comparing cities to organisms, far from organic (post)modernist lines, is not to look at them as balanced creatures, but on the contrary, to address the constant struggles for adaptation and evolution, propelled by unpredictable influxes from the exterior world, in relation to interior processes (reproductive isolation, among others). Evolution is not linear nor follows an ultimate ideal, but it is always in an unstable tension fostered by the different and contradictory parameters that generates the merger and selection of resources from a pool of varied elements (that is why the bigger the variety, the more space for possibilities). The use of morphogenesis is particularly useful to refer to urban environments⁹, specifically to urban space, materiality and flows that get shaped in time and change constantly in reactionary manners under pressing forces. The outcomes are more or less temporary spatial configurations that vary as soon as the pressing forces change, bringing up variety and richness. In the urban reality, this process can only be spot by looking at space as it actually is, and how it is changing in time, considering broader time frames; and by understanding the key moments of transformation, while addressing the usually underestimated in-between phases. Some authors (McFarlane, 2011, Fariás & Bender, 2009, Schinkel, 2011) have started taking the work of philosophers of the weight of Deleuze (1987), Latour (2005), Sloterdijk (2011-2014), closer to the design urban domain in order to produce innovative urban theoretical positions. This PhD-research intends to continue this line, and to push it beyond theory into the design tool sets and most importantly the discourse domain, using the case study of *Glòries* as a means for this.

Moving on to the focus concepts, **Collective Spaces** (the etymology comes from Middle French *collectif*, from Latin *collectivus*, from *collectus*, past participle of *colligere* “to collect”, from *com-* “together” + *legere* “to gather”), are spaces not restricted to single individual use only (including individual persons or individual groups), but that accommodate or support broader users both in number and in type and variety. They are shared or co-inhabited by larger amounts of social entities, both human and nonhuman *actants*:¹⁰ people, domains, objects and concerns of different nature. Collective space is a broad concept that ultimately constitute the city itself, including everything that is available for urban use, production and consumption, such as infrastructures, streets, open spaces, accessible facilities (of different levels), along with their different levels of agency. They acquires particular spatial and material configurations that denote broader processes through the outcoming presence. The spatio-materiality can be more or less established and stable, that is, more solidified by historical processes; or on the contrary, be more volatile, more unstable and reactive to external aspects in shorter periods of time. Usually, the conjugation of these two ends of the spectrum generates the more interesting urban situations, giving birth to non-traditional combinations of spaces, critical boundaries and territories. This hybrid level of (in)stability of urban spaces and the processes that give raise to them are here referred as “**forming dynamics**”.

Approaching collective spaces is here done in this manner, focusing on the forming dynamics, shifting the focus to its flexible spatio-material manifestation, to the fluctuant morphogenesis rather than formal determination. The PhD-research looks at the forming aspect of the form, the functional and performative, the acquired form based on an active parameter, rather than the static formative aspects. Time brings out results of this performative materiality under conformation, which can be understood by reflecting on the conformation timeline/history and by identifying points of intensity as thresholds in which quantitative changes become qualitative changes. In this manner, the dynamic status of spatio-materiality can be catch in act in its search of new intensities and new spaces of possibilities can be envisioned. The method needs different levels or scales to analyse the formal outcome and testing this progressively is the purpose of the case study. Bibliographical references on collective space (De Solà-Morales, 1992; Habraken, 1998; Sennett, 2013; Hall, 1966; Hillier, 1984, 1996, 2004) are extremely important to dive in the connotations of the collective as a category that challenges the traditional dichotomy of public and private as defined by classical positions (such as Rossi, Aymonino, etc.), and to start grasping its logics. Habrakens' reading of spaces, for example, provides great insights on the way territory gets constructed and ordered in formal, spatial and cultural terms. Placing the accent on the relation between different levels, hierarchies, accessibility stratus, transitions, building types and patters, it achieves a decodification of space in

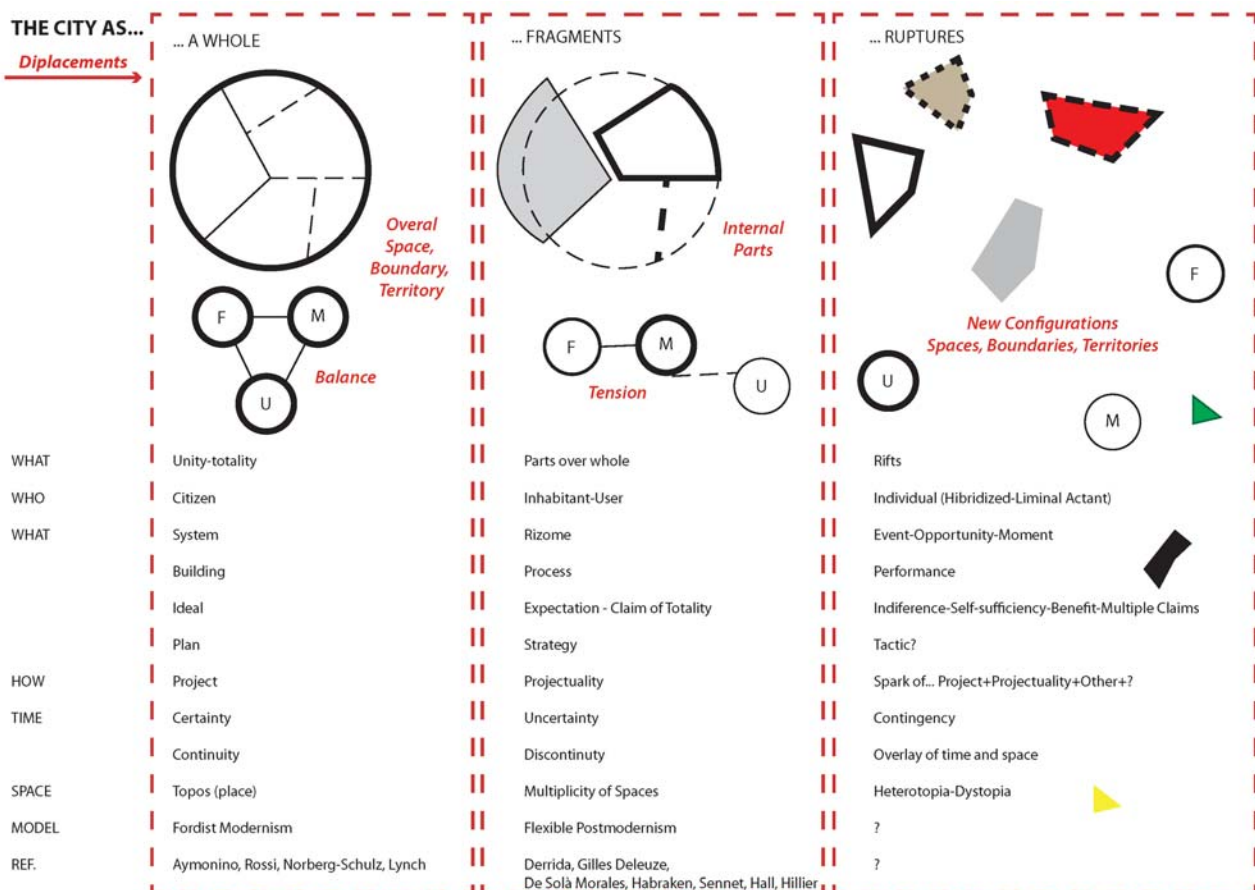
⁸ Among them Neri and Rivka Oxman, Birger Ragnvald Sevaldson, Alan Turing.

⁹ Foucault defines Environment or Milieu as the space in which circulation is carried out, the field of intervention in which individuals, populations, and groups put into conjunction elements and events that circulate beyond the site itself. (Foucault, 2004).

¹⁰ The notion of actors or *actants*, does not limit itself to human individual actors but extend the word actor to non-human, non-individual entities: something that is, that acts or to which activity is granted by others. (Latour, 2005).

categories of cultural and power order. The confrontation and enlargement of the concepts through their application into architectural and urban space has been undertaken by Prof. Dr. Kris Scheerlinck, starting by his PhD project “*Depth Configurations. Proximity, Permeability and Territorial Boundaries in Urban Projects*”¹¹ and further developed within his Research Project “*Streetscapes Territories*” at KU Leuven. One of the major achievements of this theoretical-design compound is putting in evidence the shift from traditional spatial categories based on a triple construction of public, collective and private, into one in which the collective exceeds the public domain and it is counterposed not to private but to individual spaces. In the same way, a closer look at the way collective spaces work, are appropriated and organize brings in different levels and sub-concepts as gradients, of accessibility and permeability for example, within both private and public spaces. This become crucial to define “the collective” in spaces that are either public, private or collective from the domain point of view.

The aim of this PhD-research is to look closely at the core concepts, moving from extensive interactions among the key issues, to their fluctuant reciprocal intensification; by charging them with internal parameters (sub-concepts) that constitute their operational power. As in the case of *Collective Space*, by considering it as a complex made of the notions of proximity, permeability, programmatic adjacencies, accessibility, property structure, depth configurations,¹² and of different levels of exposure, separation, edges and interfaces interactions in time,¹³ to check the character that these spaces, boundaries and territories acquire when putting them to work. Second, by studying the interactions with the other involved terms and finally by verifying the way in which they get strengthen or weaken by them. The research scope is restricted to the field of the spatial outcome as it is found, changes and interacts in time, and in its significance for design-discursive applications.



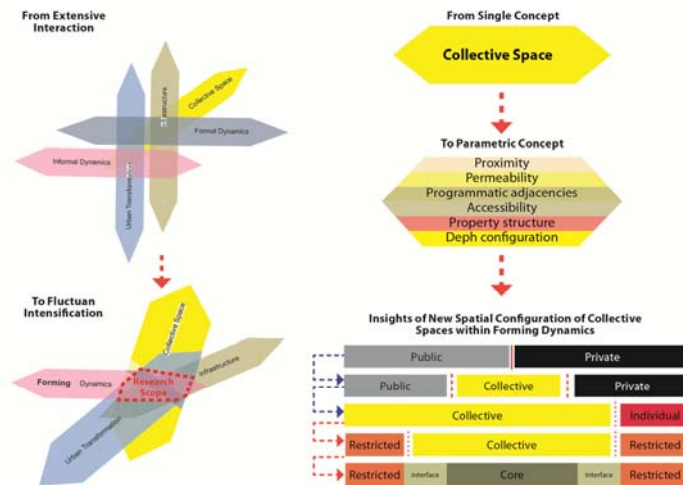
Methodological Framework and Theoretical Position: Frame Matrix

¹¹ Directed by De Solà-Morales, M. and Ferrer, A. (2010)

¹² As parameters defined by SCHEERLINCK, K. (2010-2015): Proximity as sets of relative distances between infrastructures and the surrounding; permeability as the level of depth neighbourhoods can obtain at different scales: e.g. Measure the possible contact with natural areas; accessibility understood as the integration in and efficiency of transport networks; programmatic adjacencies as simply the relation between functions.

¹³ As *ad-hoc* defined parameters in the present work as explained later.

The following frame matrix aims at organizing the great variety of references that are incorporated in the Methodology Framework and Theoretical Position; along with the methods that they are linked to in history. This matrix is to be feed constantly and retrofeed with the insights and conclusions from other stages. Author production based on Arroyo, 2011 and different bibliographical references (see Bibliography).



Methodological Framework and Theoretical Position: Scope and Spatial Insights

Explanation of the core concepts and scope. Operation of charging concepts with spatial components in order to get insights of new spatial configurations, for the case of Collective Spaces. Author production.

4.2 Case-Study and Intensity Timeline

Glòries has always been marked by the relationship between urban and infrastructural elements, which interacted in unpredictable ways. A brief summary of its origins puts this in evidence. In the first phase of this timeline, the conformation process is exposed, that is, the sequence of facts and events that lead to the accumulation of infrastructural and urban elements that characterize the area. This phase, is long in time, and has been unevenly documented, the sources are rather heterogeneous and it is harder to access equivalent graphic material from different moments to use in further stages. The second phase, the transformation process, exposes how the intensification in the awareness regarding this particularly complex urban condition catalyzes the progressive debate and eventual articulation of a transformation process that leads to the situation in the present, and extends to future plans for the next decade. This phase is shorter in time but denser in events, and due to its proximity and recording sources, the surrounding arguments and political discussions are more amalgamated.

Defining the relevancy of the *Glòries* case-study and reflecting on the timeline, **not aiming at disentangle the complexity of the case-study itself**, but at using this complexity to deploy a novel research methodology and approach. The first operation needed is the display of historical processes and its understanding in “lines”, on the one hand identifying material-factual process (acts, works, interventions); on the other hand acknowledging non-material intervention processes (projects, plans, laws). Social processes constitute a line in themselves (social tensions, claims, special events), along with physically influential spontaneous appropriation or spatial alterations (shacks, markets, areas of specific uses). Once these elements are outlined, the level of implementation, impact and interrelation between the different elements is checked. The second step in the methodology, is the identification of significant transformation moments (TM) or key interventions of broader significance in the process, in which the tensions in these lines reach higher levels ultimately generating passages from quantity to quality (De Landa, 2000). Finally, shifting the perspective away from the long studied events, the focus moves to the in-between moments (ibm), that is the time period going from transformation moment to transformation moment. The purpose is to work with the transformation in itself as well as with the more volatile urban elements. A constant retrofitting between step 4.1, 4.2, 4.3 and 4.4 is needed to guarantee the focus on the selected conceptual elements. The study of the timeline is undertaken with this lens.

4.2.1. Revisiting the Conformation Process



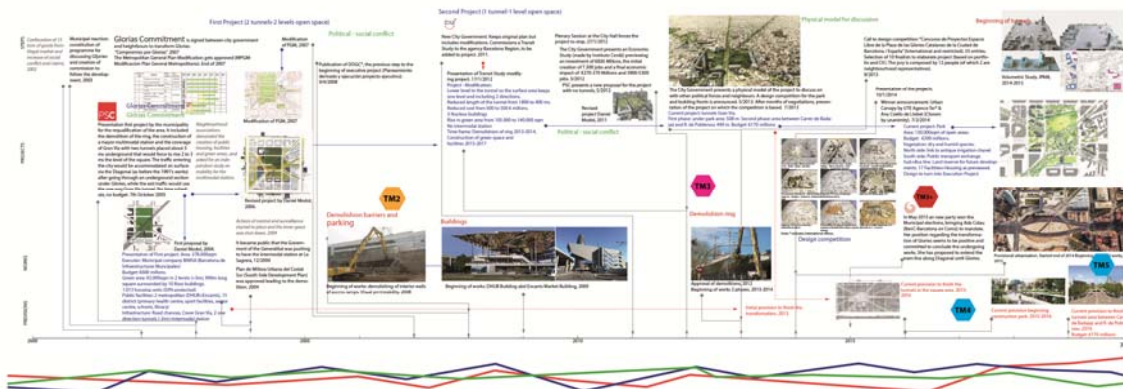
Glòries' Conformation (15 BC-2000)

In red, the material process; in blue, the project process; in red, the social process. Author production based on a variety of sources (see Bibliography).

As it is exposed in the timeline, the history of conformation of *Glòries* is characterized by a series of events, projects and actions with little or no coordination among them. Some or the actions are aimed at producing new situations (as in the case of the water canal or the early train connections), but most of them are rather reactive or purely functionalists (extensions or broadening of lanes or tram lines linked to the increased amount of users, palliative interventions aiming at reducing conflictive situations, denoting spoken and non-spoken urban dynamics, both symbolically and materially, that are hard to classify). The variety and radical style of the interventions in *Glòries* turns the area into the perfect setting for studying urban reality as an aggregation of material layers and their independence or contact points. Infrastructures face here pressing forces that are dynamic and that make of them flexible and changing construction of elements. These constructions generate rich urban qualities and could be seen as “ensembles”, i.e. as concept that include qualities and parameters: “qualities” as emergent properties (whole with parts that interact and generate new capabilities inherent to this whole), discompose ability (parts can be detached from each other), material and expressive components; and “parameters” including territorialisation and coding; Its identity is defined by the parameters at any point in time (as opposed to dichotomy) (Delueze & Guattari, 1987). Examples of this are: the paradox of covering ungrounded rails via the construction of upper level passages that end up creating an artificial landscape; the superposition of intricate different levels of passages for addressing vehicular, pedestrian and public traffic incompatibilities; and the demolition of just built elements, changes and changes back, among others. This relativize the rigidity with which we conceive infrastructures, reinforce their dynamism and the idea that the urban space and materiality linked to them are fluid resultants in constant forming process.

What is more interesting is the fact that the moments of intense activity by predominant agents, such as the local state or other public agency, both in action or projects (or even in official nomenclature), are followed by moment of “silence”. These on its time, become the most intense moments of spontaneous and social manifestations and spatial appropriation (including both harmony and conflict) and reconfiguration which immediately become part of the set of pressing forces. The constructions and consolidation of shacks, the appropriation of the left-over open space for recreational or illegal activities, the aggregation of industrial buildings of a variety of seize and characters, are samples of this. It is surprising that these “in-between” moments have not caught the attention of urban theoreticians or designers, while they represent the most valuable input for a new discourse on urban streetscapes based on nontraditional spatial conjugations of borders, proximities and territorialities.

4.2.2. Revisiting the Transformation Process



Glòries' Transformation (2000-Present)

In red, the material process; in blue, the project process; in red, the social process. Author production based on a variety of sources (see Bibliography).

The recent history of *Glòries*, besides its conflictive character and complicated evolvement, becomes extremely useful to challenge the way infrastructures are conceived. First of all, the case put in question any attempt of classification both historically and in its present existence.¹⁴ More specifically, if looked from the point of view of the parameters that define infrastructural elements regarding its position in the territory, *Glòries* exposes the whole spectrum of variations of ideology along time: "idealism", the long-lasting uneven ambition to become the new city centre; "indifference", the left over where infrastructures accumulated; "functionalism", coverage of rails and construction of different level passages; "exacerbation", construction of upper circulation as a technical sign of a modern society. Today, it fits a multiplicity of classifications in meaning or strategies: "hiding", an underground tunnel is to be constructed, which 1st part will be hidden by a new park; "camouflage", the 2nd part of the tunnel plugs into an existent semicovered avenue; "fusion" of different components into a new entity, the underworld of metro, trains tunnels, and upper world of tram, cars and pedestrians relations are to be explored further; and "megastructure", the infrastructural interventions are thought within a larger urban plan.

The same happens when studying its trajectory from the point of view of the spatial perception, again fitting different categories: "transitions as a threshold", the idea of passage from one place to another that is inherent in the very nature of the tunnel as types of infrastructure; and "distinctive sequences", phases along the route from the outskirts to the city centre. This is useful for studying the spatio-material implications of the infrastructural devices in relation to the collective level that they define. It is evident that the perception of the landscape along the route, in this case is overcome by the opposite concern: the disruption of visuals in the landscape. This phenomenon is partially triggered by the NIMBY ("not in my back yard"¹⁵) syndrome (which paradoxically does not reach an inhabitant critical mass point in this case), but mostly by the fact that, despite the politically correct claims of requalification (with the different tones according to the claiming part), the area is still mainly valued for the land availability to gather pending urban elements (built mass, green space). This becomes clear when verifying that its larger urban significance is disconnected from other major transformation processes in Barcelona, particularly the High Speed Train Station La Sagrera; and forcefully linked to urban processes of questionable impact (green corridors, 22@ district), while in fact focusing on rather specifically local issues: "solving" a symbolic conflictive point, providing facilities to adjacent *barrios*.

4.3 Deploying Existent Explorative Methods

The methodology is set to study the spaces, infrastructures and buildings under these new conceptual frame, by embracing notions of proximity, permeability, accessibility, among others, as gradients and an upgraded relation between built and open spaces as creative adjacencies by focusing on the interactions between edges and interfaces. Complementing and challenging the research line on Streetscapes Territories developed by Prof. Dr. Kris Scheerlinck at KU Leuven, the project aims to register, map, develop insights, discuss and push forward a transfer process between actual urban phenomena and potential disciplinary resources from a theoretical, strategic and design point of view. For achieving this, preliminary tests are performed, deploying traditional methods such as classical urban form analysis¹⁶, space syntax, advanced urban form reading (Barcelona School's *Urbanización + Parcelación + Edificación* - UPE methodology¹⁷) and the catalogue of newly developed *Streetscape Territories* techniques. Reflecting on their suitability regarding design theory is crucial.

¹⁴ Categories regarding position in the territory, meaning or strategies and spatial perception of infrastructures, based on Shannon & Smets, 2009; Smets, 2001; Lloyd & Stoll, 2010' s contribution.

¹⁵ Visual and environmental claims by building inhabitants facing infrastructures.

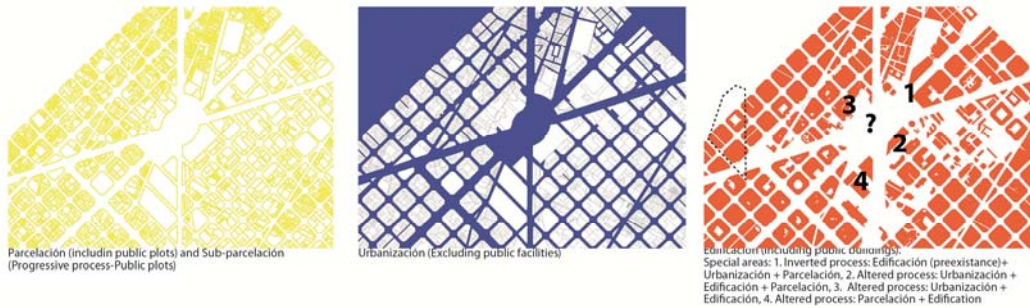
¹⁶ Based on the classical research lines on the built environment of authors such as Kevin Lynch, Aldo Rossi, Rob Krier, Gordon Cullen, etc.

¹⁷ As developed at the ETSAB by De Solà-Morales and team.



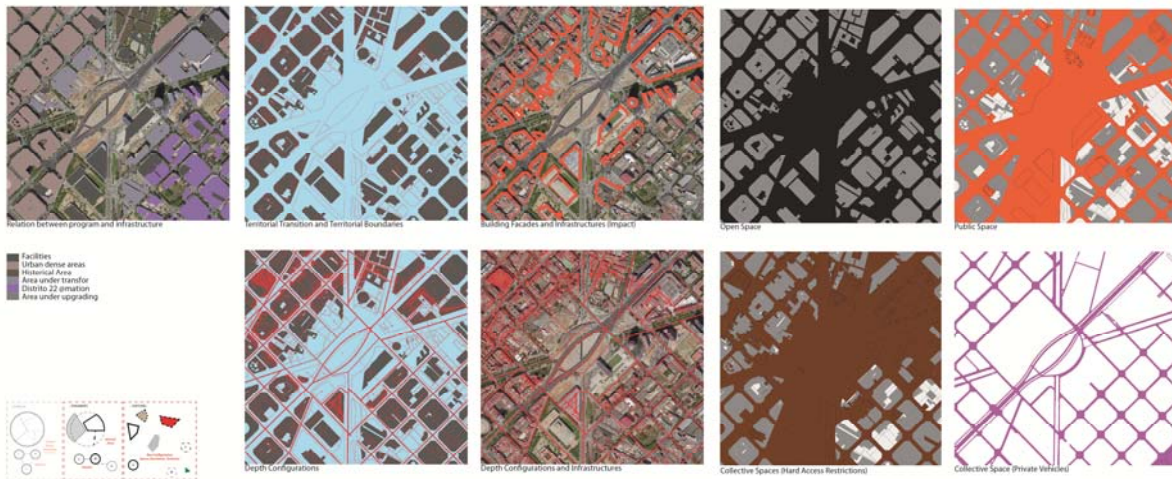
Classical Urban Form Analysis: Static Tools

Contraposition between registered elements and the complexity of the case. Author production.



Barcelona School: Parcelación+Urbanización+Edificación and Competition Material

Author production and Ajuntament de Barcelona.



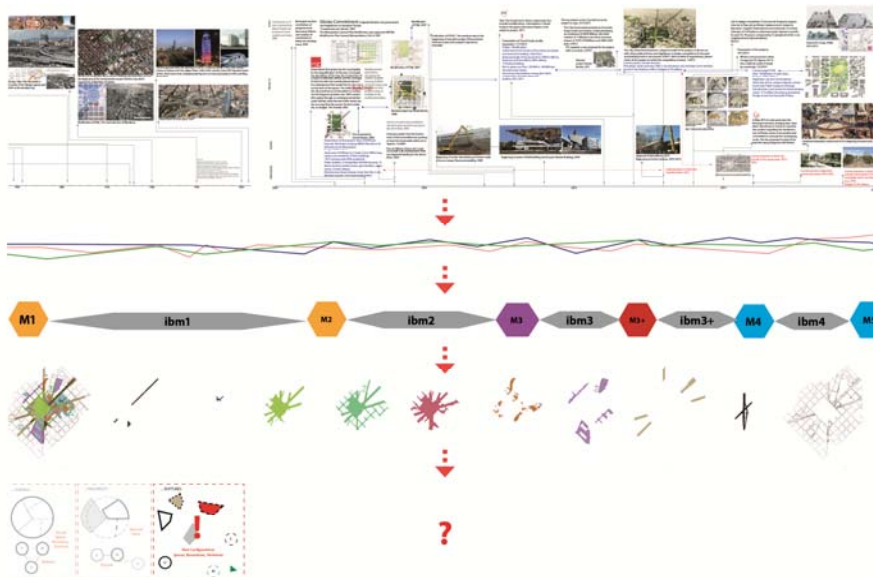
Streetscapes Territories

Author production based on Scheerlinck, 2012-2015.

From the studies (of which only a fraction is here shown), a set of preliminary conclusions can be extracted; among them, the fact that there is a mismatching between the complexity of the site and the outcomes from the analysis that even in the case of an update would be hard to overcome. The second is that these explorative resources match more or less closely one of the stages exposed in the conceptual matrix, and consider urban space mostly within an actual unity or as part of a claimed one. Furthermore, these explorative methods, give as a result a set of possibilities in terms of design methodologies. From the school of Barcelona on this position starts to break down a looks for alternatives, and it is evidently in the case of Streetscapes Territories, where traditional spatial categories start to be abandoned in search of new ways of understanding and intervening in collective spaces.

4.4 Developing Forming Collective Streetscapes, a New Explorative Method?

This PhD-research aims to develop Forming Collective Streetscapes as a new explorative method that includes theoretical, analytical, exploration and design potential. This is to be triggered with the methodological framework, the use of the timeline and the outcome of the aforementioned existent resources, plus a series of methodological tests to push this further. The current status in the development of the tool is at an initial stage, including the layout of the key elements and the verification of the epistemological coherence. It is put under discussion at seminars and research meetings and confronted with its applicability in other cases.



Methodological Stages

Intensity Timeline – Transformation Moments and In-Between Moments, Complex Elements: Core, Complex Elements: Core. Author production.

4.4.1. Transformation Moments and In-Between Moments

Based on the Intensity Timeline, it follows the identification of crucial Transformation Moments (MT) based on a series of facts and events that marked the conformation and transformation of *Glòries*. To this, a series of In-Between Moments (ibm) is overlaid to shift the focus to the transitions and modifications, rather than on the fixed elements. Once the key TM have been spotted, a set of detailed drawings (plans and sections, along with 3D models) are produced to fully display them, and clearly indicate the main urban elements. A variety of sources are here combined showing the building mass, plots, street layout, public transport infrastructure in different levels, fences, walls and independent constructions, pedestrian indications, green spaces and elements, among others. To obtain the ibm, certain digital operations and graphical tools are to be incorporated in order to represent the changes between moments, allowing the visualization of the fluctuation between static moments, through complementary images and videos of the transformations (Check the video on: https://youtu.be/n_ffDI7Tk).

Moment 1: 1990 (*Upper Circulation+Market+Central Square*)

Central Square: internal green space separated visually and physical from surrounding streets, No tram lines, Underground tunnels for train, metro, sanitary infrastructure.



Moment 2: 2010 (*Upper Circulation+Market+New Buildings*)

Demolition of physical and visual barriers: 2008, Tram T4: 2004 (North), Tram T5: 2006 (North), Tram T6: 2012 (South), Torre Agbar: 2005, HUB Disseny: 2009, Les Encants Market: 2010.



Moment 3: 2015 (*Temporary Crossing+Semi Demolished Market+New Buildings*)

Demolition of upper circulation: 2013-2014, Temporary urbanization: 2014-2015, Beginning of works: 2015, Land claims and first demolitions, Beginning construction park: 2015, Beginning construction Escuela Infantil y Primaria de los Encants: 2014.



Moment 3+: 2016 (*Temporary Crossing+Semi Demolished Market+New Buildings*)

Temporary urbanization: 2016, Works: 2016, Land claims and demolitions, Construction park: 2016, Opening Escuela de Infantil y Primaria de los Encants: 2014.



Moment 4: 2017 (Prevision) (*Tunnel+New Buildings+Demolitions*)

First phase of tunnel to be completed: mid 2017, Further land claims and demolitions at northern edge, Further construction park: 2017.



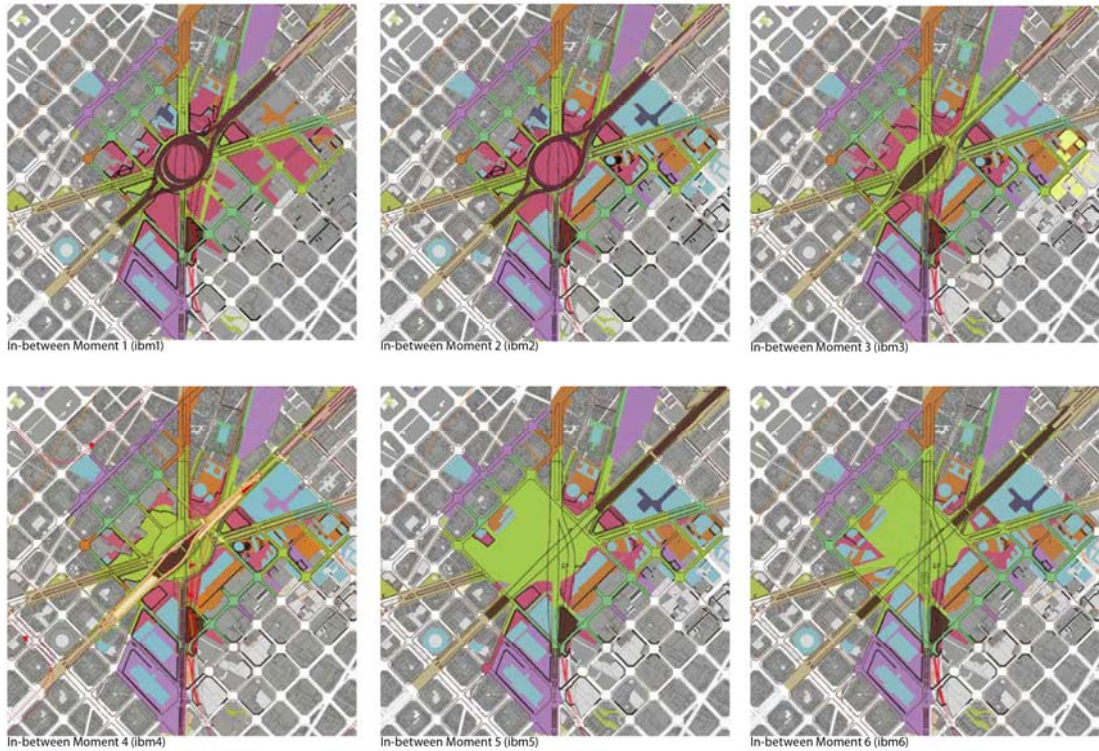
Moment 5: 2019 (Prevision) (*Tunnel+New Buildings+Demolished Buildings+New Edge*)

Second phase of tunnel to be completed: mid 2019, Final construction park: 2019, Competitions and beginning of construction of new buildings at the northern and eastern edge: 2019.



Transformation Moments (TM)

Author production based on a variety of sources (see Bibliography).



In-Between Moments (ibm)
Author production.

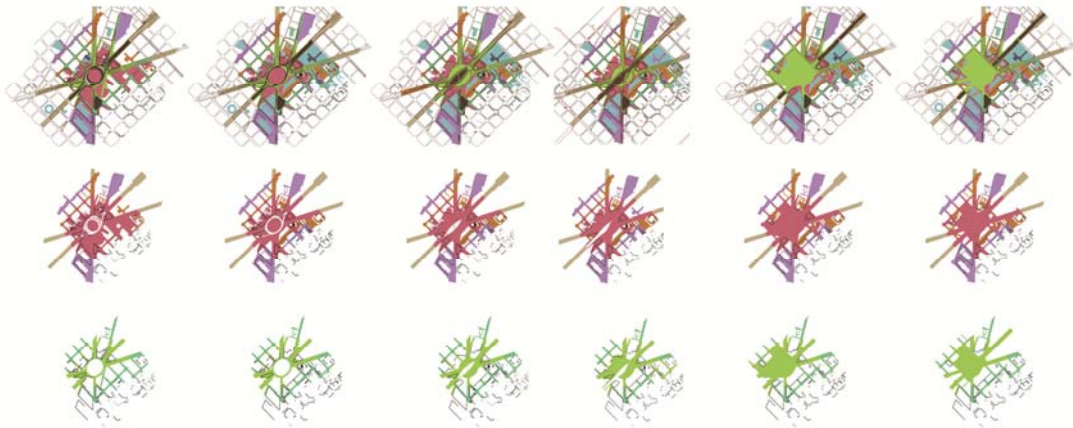
4.4.2. Complex Elements: Core

Once the specific character of each TM and ibm has been put in evidence, the graphic material and mappings are subjected to a set of parameters to study the focus sub-concepts: proximity; permeability; accessibility; programmatic adjacencies, through the material, domain, and infrastructure edges, infrastructural edges at different levels, among others. Increasing progressively the level of complexity and definition allows to go in detail to the recording of space as it is found from different viewpoints and to communicate it. The core elements are then freely used and combined to study there matching and mismatching points, their relations, and fluctuations, among others, both in qualitative and quantitative terms.



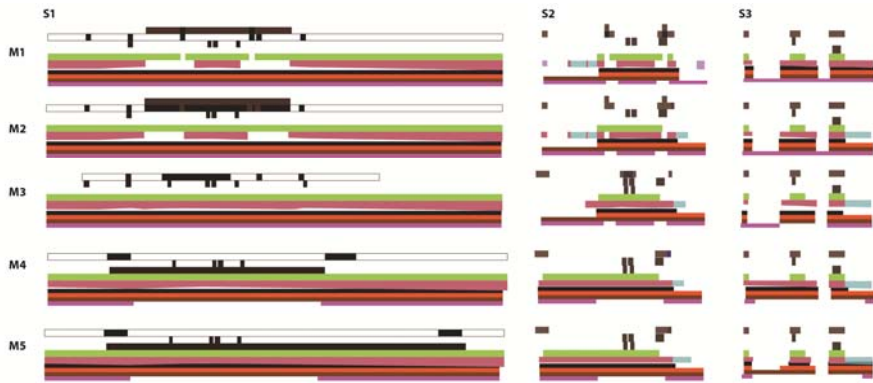
Complex Elements: Core Elements in Plan per ibm

From Left to Right: Summary map, Infrastructure-Non Permeable (ground level), Individual/Collective: Open Collective, Domain Edge: Domain Frontscape (nucleus and extended), Material Edge: Built Frontscape (nucleus)/Built Buffer/Built Backscape, Horizon Lines, Infrastructure-Non Permeable (underground level), Infrastructure-Permeable. Author production.



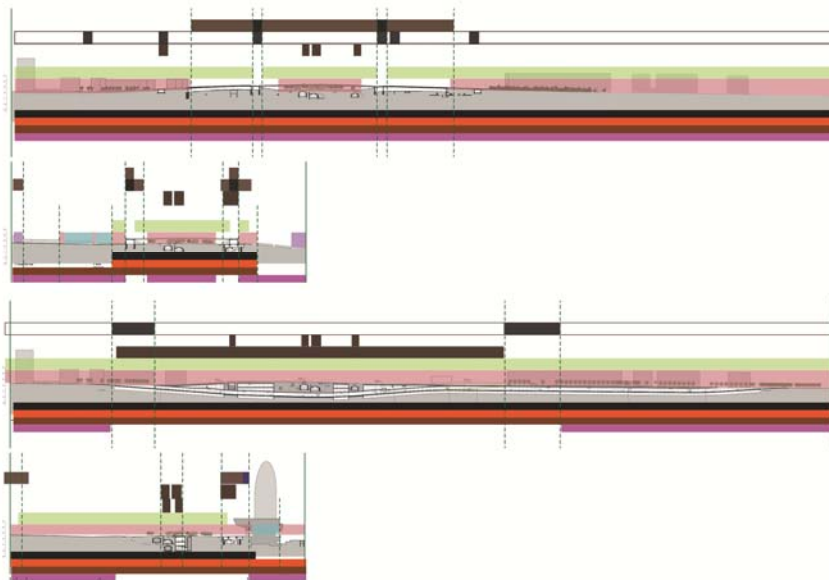
Complex Elements: Core Elements Selection in Plan per ibm, Fluctuation in Time

Author production. Top: summary map; medium: interaction between Material edge and Challengers (walls) in time; bottom: interaction between Domain edge and Challengers (walls) in time.



Complex Elements: Core per ibm in Section, Fluctuation in Time and Comparison Elements Only

A sort of tomography of the core elements per section, per ibm, in time for qualitative and quantitative analysis. Author production.



Complex Elements: Core in Section (Zooms ibm1 and ibm2), Fluctuation in Time

From bottom to top: Streetscape Territory's collective, public and open spaces; material edge, domain edge, infrastructure edge in different levels. Interactions, matching and mismatching. Author production.

4.4.3. Complex Elements: Interfaces

To further study the interrelation between elements, moving on into their spatiality and materiality is necessary, and the interfaces (Bobic, 2004; Schreurs, 2013; Dovey & Wood, 2015) between core elements and between open and closed spaces, acquire a pivotal role. In order to achieve this, a considerable enlargement in the degree of detail is needed. Some preliminary ideas on the potentialities of the tool start emerging via these operations and help envisioning the future methodological stages needed for their verification. The focus is now deliberately placed at describing and understanding how the level of accessibility is related to the spatiality, and how the level of permeability is related to materiality. The perceptive component gets intertwined with the morphogenetic study.



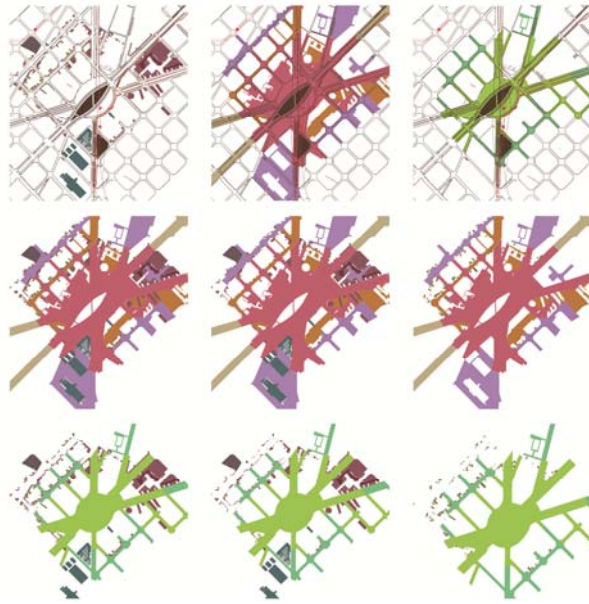
Complex Elements: Interfaces: Spatiality (Level of accessibility)

Further level of definition in edges and interfaces between open and closed space: The defined categories are: Open space without access restrictions (public space). Level 1: Open space without permanent access restriction (Ex. Setback), Level 2-A: Open space without periodic access restriction (Ex. Shop), Level 2-B: Open space without periodic access restriction (Ex. Facilities), Level 3: Open space without temporary access restriction (Ex. Lobbies). Open space including access restrictions (collective spaces) Level 4: Open space with temporary access restriction (Ex. Parking and corridors). Level 5: Open space with permanent access restriction (Ex. Closed shop). Author production.



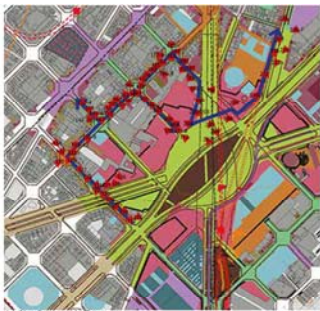
Complex Elements: Interfaces: Materiality (Level of permeability)

Further level of definition in edges and interfaces between open and closed space: The defined categories are: Level 1: Impermeable. Level 2: Permeable: Material. Level 3: Permeable: Visual. Level 4: Permeable: Visual + Material. Level 5: Setback. Changes between levels. Author production.



Complex Elements: Interactions

Top: interaction between interface and infrastructure; medium: interaction between interface and material edge core; bottom: interaction between interface and domain edge core. Author production.



In Situ Research Tours



Fence on private plot: High level of visual permeability



Detail on the level difference in the South West corner



New exposed facade



Interiors



Setbacks in collective housing and shops.
High level of permeability. Visual +Material

Spatiality: Level of Accessibility - Materiality: Level of Permeability. Adjacent Areas

The core elements and interfaces are studied *in situ* and the way they manifest in space become further input for checking the methodology. A vital component is the investigation of the changes in time along the research progress. Author production.



Spatiality: Level of Accessibility - Materiality: Level of Permeability, Central Area, Eastern Edge



Spatiality: Level of Accessibility - Materiality: Level of Permeability, Central Area, South Edge



Spatiality: Level of Accessibility - Materiality: Level of Permeability, Central Area, Northern Edge

Spatiality: Level of Accessibility - Materiality: Level of Permeability. Central Area

The core elements and interfaces are studied *in situ* and the way they manifest in space become further input for checking the methodology. A vital component is the investigation of the changes in time along the research progress. Author production.

5. PRELIMINARY CONCLUSIONS AND FURTHER ACTIONS

At present, as it is exposed in the graphical and literary material, the operations investigate collective spaces as forming dynamic assemblages, i.e. as hybrid parametric concepts charged with core complex elements and interfaces in constant fluctuations. Starting by the void/open space, the collective space is investigated as a device, which new spatial categories start to be unveiled. The study of the transformation, impact, and matching/not matching situations of core elements and interfaces (material-domain edges, challengers, visuals, fences, etc.) are used for this purpose. Tied to the definition, interiors and transition spaces can be included as part of the collective realm, and their levels of accessibility, permeability, porosity, opacity, exposure are unmasked. The use of different scales within a coherent frame, allows to move along different levels without losing consistency, and subtle and large scale issues can be tackled at the same time. In this way, an attempt is done to develop a tool for investigating space, boundaries and territories from simultaneous spatio-material and perceptive point of views.

The tool set and inputs for a new discourse on the way to transform and develop collective space in contemporary western cities can potentially reach maturity if the issues at stake are refined and retrofit from post structuralist conceptual perspectives and if the potentiality of the tool is further tested. This methodology focuses on negative spaces, fluctuant dynamics, voids, leftovers, spatio-material fluxes, aiming to describe and understand fragments of space in which transformation processes are manifested; by challenging traditional approaches (based on positive spaces, building mass, grids, and static conditions), it pursuits a different investigation of urban environments. Focusing on time and spaces (with a greater definition) as they are found exposes the richness of actual collective spaces, and contrasts with the general conception of urban spaces and projects as static outcomes, in which in the name of a “perfect picture”, the crystallization and extreme formalization become the ultimate goals.

The generation of insights on the spatial configuration of collective spaces within forming dynamics, by addressing the relation between infrastructure and urban transformation, particularly in *Glòries* is the main goal of this PhD-research. In this frame, *Forming Collective Streetscapes, as Conceptual and Design Theory Input* constitutes the ultimate methodological stage. At this point, the systematization of findings for the transfer of strategies of spatial configurations and urban design theory are undertaken in order to enquire

and speculate on disciplinary opportunities and strategic resources. Moving into teaching and practice is now fundamental and will be launched in the near future, through workshops and sessions within the International Master of Architecture of the Faculty of Architecture KU Leuven Campus Sint-Lucas Brussels and Ghent and partner institutions.

A further methodological step is the study of *Reference Projects* of urban transformations propelled by infrastructure of similar scale. The purpose is to study the way the focus concepts are dealt with in western contemporary cities including different contexts, outcomes, methods, and principles.¹⁸

Ultimately, a *Scale Shift* will be performed to include the corridor La Sagrera Station and the Northern traffic node C58-C33-B20 (Vallbona-Torre Baró-La Trinitat Vella, shortly VBT Traffic Node). These cases (also in Barcelona, physically and symbolically related to *Glòries*) will allow the study of infrastructures and its relation to urban transformation from a larger perspective, gathering the same set of issues, but in completely different urban contexts. *Glòries* representing the inner-city case; La Sagrera Station, the area of programmatic vacancy reconverted for large scale regional infrastructure elements, and the VBT traffic node as the encounter point between peripheral infrastructural elements and differently consolidated urban fabrics.

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¹⁸ A preliminary list of potential reference projects include the Slussen, Stockholm (Tage William-Olsson): as case under redevelopment feasibility studies; Zurich west area: as major redevelopment of inner waste lands on the linked to railway; Leuven train station environment; Amsterdam's station area: as 90s' paradigm; Docklands. London / HafenCity Hamburg (Kees Christiaanse, KCAP)/ Marseille seafront: as harbour redevelopments; London Olympic site.

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