

Temporary appropriation: Theory and Practice of the Street

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ABSTRACT

The research presented here aims to explore the role of temporary appropriation (TA) of the urban landscape from an urban design approach. The thesis consists of five papers to offer evidence of the complex and the symbiotic nature of TA in relationship to other dimensions and relevant issues of the urban landscape such as sustainability, informality, culture and inclusivity, streetscape design and regulations controlling the use of public spaces.

The first paper theoretically discusses and conceptualises TA within the urban landscape through an extensive review of theoretical and empirical manuscripts. It proposes TA as an indicator of social sustainability in the urban environment. The second paper explores the concept of both informality and TA in an urban context, challenging the existing definitions of informality as applied in studies concerning informal practices in the Global North. It concludes that some understandings of informal behaviour in urban settings could be better studied when viewed as forms of TA. The third paper utilises assemblage theory, conceptualising TA as an emerging product of other assemblages such as culture, legal framework and urban design. To do so it selected a representative sample street as a case-study to analyse TA in relation to the streetscape design through participant observation and image analysis of the visual complexity of the streetscape. The findings provide further support to the use of assemblage theory as a theoretical framework for investigating urban-social phenomena such as TA. The fourth paper identifies design elements of the streetscape design that support diversity of TA, in the context of Mexico City Centre. The paper is an initial contribution to codify elements pertaining to urban design, such as materials, urban furniture and landscaping, while assessing their capability of encouraging an informal use of public space. The second major finding was new types of TA are emerging, challenging formal prescriptions as counter spaces or spaces of resistance. The fifth paper discusses the relevance of TA in relation to urban social dynamics. It examines the laws and regulations set out by the government of Mexico City which regulate the use of the street in the historic centre. It highlights the contrast between the ways in which the inhabitants of the city appropriate public space on a daily basis, putting in evidence the lack of clarity in the legislation surrounding potential activities occurring on the street, and a seemingly tacit consensus among citizens regarding how they appropriate such public spaces. The findings outline the ways in which public space is used in traditional and unexpected ways, how creative ways are found to use the street area within the spirit of the law, and where further research on this topic this could lead in future.

Overall, this thesis shows that these dimensions and urban issues illustrated here are continuously overlapping, intertwined with each other, evidencing the ever changing and multi-scalar complexity of TA. Future research should be directed to enhance our knowledge about TA in the urban environment in relationship to urban design.

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DECLARATION

Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

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DEDICATION

To
Alfredo

To
Armando, la Mama & mi Padre

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GLOSSARY OF KEY TERMS

Autoridad del Centro Histórico: An institution that supports the activities of the Head of Government, where the powers of the Public Administration Units of the Government of Mexico City (CDMX) are concentrated by each delegation. It acts under the criteria of unity, autonomy, functionality, efficiency, coordination and impartiality for the planning and ordering of the territorial, economic and social development of the Historic Centre.

Autoridad del Espacio Público: An institution in charge of strategically designing, planning and developing public spaces in Mexico City (Gobierno de la Ciudad de Mexico, 2016).

Built environment: Man-made structures, features, and facilities viewed collectively as an environment in which people live and work (Oxford University Press, 2015).

Cultural heritage: Monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of Outstanding Universal Value from the point of view of history, art or science; - groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of Outstanding Universal Value from the point of view of history, art or science; - sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of Outstanding Universal Value from the historical, aesthetic, ethnological or anthropological points of view (UNESCO, 2015).

Cultural landscapes: This refers to cultural properties and represents the "combined works of nature and of man" designated in Article 1 of the Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (UNESCO, 2015)

Fideicomiso Centro Histórico of Mexico City: An institution which depends on the government of Mexico City. Among their main objectives are the promotion, management and coordination of actions and services between private investors and public authorities that protect, recover and preserve MCC. Also, to design specific actions and projects for the benefit of MCC (Gobierno de la Ciudad de Mexico, 2016).

Mexico City Centre: The biggest city centre in the American continent; it is located at the core of Mexico City, it compounded by 668 blocks with a surface of 9.7 km². In 1987 it was declared

by the UNESCO (2013) as a cultural heritage site due to its uniqueness, authenticity and integrity of the built-environment and culture (CONACULTA, 2017).

Musealisation: It is a current strategy for transforming urban spaces, and exerts significant influence on our social, cultural and aesthetic efforts directed towards visible reconstruction of the past (Muller, 1999).

Normalisation: A term originating in statistics. It eliminates the unit of measurement by transforming the data into new scores with a mean of 0 and a standard deviation of 1. These transformed scores are known as Z-scores (Abdi & Williams, 2010).

Pedestrianisation: The action or process of prohibiting wheeled or motor traffic from a road, esp. in the centre of an urban area, in order to allow its free use by pedestrians. (Oxford University Press, 2015)

Sacralise: To endow with sacred significance (frequently through ritual); to set apart from ordinary life or use as sacred (Oxford University Press, 2015).

Sedibility: An element of the streetscape referring to the number of seating opportunities visible in each picture such as benches, low walls or café chairs (Porta & Renne, 2005).

Social sustainability: Within the urban context this aims to not compromise the social needs that the built environment can satisfy for future generations. It is a combination of designing both physical and social realm, infrastructure to support social and cultural life (Woodcraft, 2015).

Streetscape: The spatial arrangement and visual appearance of built and landscape features when viewed from the street (Anon, 1979).

Temporary appropriation (TA): The act in which people use public spaces to carry out individual or collective activities other than the purpose that space was originally designed for (Fonseca Rodriguez, 2015).

Urban regeneration: Comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change (Roberts, 2016:p.17).

DISSEMINATION

ACADEMIC ARTICLES

Lara-Hernandez, J. A., Melis, A., & Lehmann, S. (2019). Temporary Appropriation of Public Space As an Emergence Assemblage for the Future Urban Landscape: The Case of Mexico City. *Future Cities and Environment*, 5(1), 5. DOI: <http://doi.org/10.5334/fce.53>. Ubiquity Press.

Lara-Hernandez, J.A., Melis, A. & Coulter, C. (2019) Using the street in Mexico City Centre: temporary appropriation of public space vs legislation governing street use. *Journal of Public Space*. UN-Habitat.

Lara-Hernandez, J. A., Melis, A. and Coulter, C. (2019) ‘Temporary appropriation and informality: a nuanced relationship’, *Cities*, under review. Elsevier.

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Melis, A. et al. (2018) ‘The return to nature in the radical thinking’, *Journal of New Frontiers in Spatial Concepts*. Venice, Italy: KIT Scientific Publishing, 10, pp. 23–27. Available at: <http://ejournal.uvka.de/spatialconcepts/archives/>.

Lara-Hernandez, J.A., Melis, A. & Caputo, S. (2017) Understanding Spatial Configuration and Temporary Appropriation of the Street in Latin American cities: the case of Mexico City Centre Hocine Boudagh, Antonella Versaci, Ferdinando Trapani, Marco Migliore, et al. (eds.). *Advances in Science, Technology & Innovation*. 153–173. Springer.

SELECTED CONFERENCE PAPERS AND OTHER RESEARCH OUTPUTS

-Melis, A. and Lara-Hernandez, J.A. (2018). Fonte Mazzola Cultural Park by Heliopolis 21. CARU annual conference. Oxford Brookes University (UK).

-Lara-Hernandez, A., Melis, A., & Hinojosa-Rebolledo, E. (2018). XV Conference on Urban Health. Munyonyo. Uganda. Elsevier.

-Lara-Hernandez, J.A. (2018). APRU Sustainable Cities and Landscapes Conference. University of Hong Kong, Hong Kong.

Lara-Hernandez, J.A. (2018). INSIGHT China-UK Urban Regeneration and Sustainable Communities Leadership Workshop. Xi’an Jiaotong University, China.

Lara-Hernandez, J.A. (2018). APL Seminar Series & GURU 25. Newcastle University, Newcastle, UK.

Lara-Hernandez, J.A., Melis, A. and Caputo, S. (2017). UPADSD Urban Planning and Architectural Design for Sustainable Development. Università Degli Studi di Palermo, Sicily, Italy. (Springer).

CHAPTER 1 GENERAL INTRODUCTION

It is expected that the urban population will increase up to 80% of the total global population by 2050, meaning that 6.7 billion inhabitants will be living in cities (United Nations, 2014). In such a scenario the use and design of public spaces in a city, argued to be a more sustainable urban model (Bay & Lehmann, 2017), will play a crucial role. Since more than a century researchers such as Whyte (1980), Jacobs (1987); professionals such as Gehl (2011), Carmona (2010); and activists such as Jacobs (1961) and Lydon (2012) have discussed how the design of public spaces (streets and squares) affects its use through people's activities. For instance, Whyte (1980), Low (1996) and Carr (1992) have studied the design elements of the square capable to make people to temporarily appropriate them (or not). Similarly, Kim (2015), Salazar-Trujillo (2010) and Jacobs (1993) (just to name a few) have studied how the street is temporarily appropriated and its implication with urban design. The square is among the main typologies of the public space that have been studied the most (Carr *et al.*, 1992; Kärholm, 2007; Whyte, 1980; Low, 2005), while the street which is most versatile and abundant in cities (Moudon, 1991; Anderson, 1986b) has been studied the less. The understanding of this relationship between the design of public spaces (built environment) and its temporarily use is essential and it must to be researched thoroughly. One key point in this relationship is the urban phenomenon known as Temporary Appropriation (TA); the following paragraph will explain it briefly.

The environmental-psychologist Korosec-Serfaty (1976) introduced the term appropriation at the Proceedings of Strasbourg conference, describing it as a temporary phenomenon that implies a dynamic process of interaction between the individual and its surroundings (built environment). In other words a process of humanisation (Graumann, 1976). Authors such as Purcell (2002), Yory-Garcia (2003; 2013) and Pol-Urrutia (2002) emphasise that appropriation is a human's inborn need expressed through activities in the urban landscape, in which public spaces play a crucial role (Madanipour, 1996b; Moudon, 1991; Noschis *et al.*, 1978). Thus, while appropriation is a broader term, its temporary variation refers more specifically to public spaces. Here, the term "temporary appropriation" is defined as the act in which people use and appropriate public spaces to carry out individual or collective activities other than the purpose that the space was originally designed for (Fonseca Rodriguez, 2015). Furthermore, sociologists suggest that TA diversity is translated into public space inclusivity, the more TA diversity the more inclusive a public space will be (Giglia, 2013; Martinez-Ramirez, 2015). However, no previous empirical studies have been found supporting this argument.

Recently there has been renewed interest in TA, indeed in the age of globalisation, increasing social and cultural challenges finding new ways of thinking that could potentially assist us in enhancing the quality and the inclusivity of the urban environment and the role of public spaces could be useful. Throughout this thesis it will be argued that TA occurring in the urban landscape is deeply linked to the social, political, environmental, cultural, psychological and biological dimensions of the individual and of society as a whole, consequentially involved with urban research.

Research in urban design has been controversial and there is no agreement towards a common theory of urban design. Foroughmand Araabi and McDonald (2019) argue that there is a need to consider more general issues of epistemology and ontology in order to move forward. Madanipour (2014) argues that there is a mismatch between the orthodoxy of urban design tools and its objectives. Sorkin (2009) claims that urban design theory is self-referential, which is supported by Cuthbert (2007) who states that a meaningful attempt to connect urban design with the “reality of social life” is missing. Therefore, the connection between knowledge and urban problems would only be enhanced by a clear philosophical framework capable of acknowledging the complexity of urban change. The study of urban design must embrace problems caused by forces of complex political, social and economic changes, which mechanisms are ever changing, self-made and varies across locations. Researchers such as Kates et. al. (2001) and Clark & Dickson (2003) argue that research focused about human transformation and urban mechanism is needed as essential to the science empirical agenda for the global interest. However, Brenner and Schmid (2015) criticise the limited scope of inherited epistemologies of urban studies to deal with urban problems. In addition, the constant change of urban mechanisms has the effect of making us think that the socio-political system of the current world does not follow any rules (Lazzarato, 2015). Thus, an epistemology capable of theorising such dynamic essence is required to grasp such ever changing complexity.

Currently, the use of assemblage theory to explore, analyse or describe urban phenomena has become relevant, thanks to its orientation towards considering different disciplines, which makes it extremely resilient. In addition, it offers an ontological paradigm change that could be helpful when reflecting on the dynamic complexity of cities (Foroughmand Araabi & McDonald, 2019). The literature ranges from more theoretical pieces such as Anderson (2012), Muller (2016), De Landa (1999; 2006), Dovey et al. (2018) and Foroughmand Araabi and McDonald (2019) to those more focused on its practical application such as McFarlane (2011),

Dovey (2012) and Dovey and Pafka (2014). However, despite the considerable amount of research an ontological swift has not been discussed abundantly. As De Landa (2006) and Foroughmand Araabi (2019) claim, regarding theoretical frameworks, ontology and epistemology construct the support for values and norms, which are the back bone for urban design. In fact, such values and norms are representations of the self-made codes or regulations of any given society. Thus, a methodology that works, assess and development them is required. This thesis takes an affirmative approach that do no aim to disclaim current theories neither fully accept them. As defined by Braidotti (2013), it is an intersection of critical thinking and creativity, it provides unseen perspectives once the established way of thinking have reached its limits. This approach deals with the epistemological, ontological complexity and normative requirements of urban design, going beyond simplified philosophical models, such as the one required to study TA.

Researchers have not treated TA in much detail. So far very little attention has been paid to the role of TA in the urban landscape. How we could conceptualise TA in the urban landscape? To what extent TA is related to informality? how the streetscape design could contribute to increase diversity of TA in the urban landscape? To what extent TA is influenced by the regulations over the use of the public space? Giving the dynamic nature of TA, in order to unravel its nature this thesis uses assemblage thinking which focus on the relationships between elements rather than the elements itself. This research has identified three main pillars that are essential to TA in terms of relationships and flows in any given context: the design of the built environment, the cultural landscape and the regulatory framework. The relationships (assemblages) between these pillars are described, conceptualised and analysed in each of the chapters. Furthermore, the pillars are also intertwined with relevant issues that the current urban design research agenda is aimed to address (United Nations, 2015) such as sustainability (Valentin & Spangenberg, 2000; Neilagh & Ghafourian, 2018; Garcia & Vale, 2017; Bay & Lehmann, 2017), informality (Alfaro d'Alençon, Moretto & Smith, 2016; Anon, 2004; Binelli, 2016) and overall inclusivity in the urban landscape (UNESCO, 2017a; Anon, 2010; Arthurson, 2010; Herbert, 2010). This thesis will show, explicitly and implicitly that these assemblages dealing with the afore mentioned urban issues are continuously overlapping, interacting with each other, evidencing the dynamic and multi-scalar complexity of TA. In addition, the thesis provides a new methodology (Chapter 4 and Chapter 5) to assess and compare cross-cultural environments by focusing on the assemblage's settings and assemblage's activities of the urban landscape. The assemblage's settings are assessed utilising image analysis, which allows to appraise the street

three-dimensionally; while assemblage's activities are gathered through overt participant observation. An important aspect in the latter is that incorporates a diversity gauge called Shannon index, which is a statistical formula borrowed from ecological studies aimed to measure diversity among individuals within a population. The use of Shannon index is convenient because it allows to precisely assess diversity, assuming that individuals (observed amount of TA activities) are randomly sampled from an 'indefinitely large' (almost infinite) population, including all the species (observed types of TA) represented in the sample (Magurran, 1988; Pielou, 1975). It is calculated from the equation $H' = -\sum p_i \ln p_i$. The quantity P_i is the proportion of individuals found in the species. In a sample the true value of p_i is unknown but is estimated as n_i/N . Although the formula is widely utilised within the field of ecology (Pielou, 1975; Ter Steege, 2010; Keylock & Lane, 2005), recently it has gained popularity among urban design studies too (Parris, 2016; Garcia, 2013; Mohajeri, French & Gudmundsson, 2013).

Although TA is a global urban phenomenon, as will be shown in the following chapters, the research is mainly focused on the analysis of Mexico City Centre (MCC) as a research context. According to DeLanda (2016) some cities could, be catalogued as a highly "coded city", meaning that they have a unique regional culture and a well-defined identity. Thus, Mexico City is selected as an example of a highly coded city, which is convenient for illustrating one of the arguments presented in this thesis (explained in detail in Chapter 4).

The current PhD thesis follows a continental style¹, consisting of five chapters (papers) aimed to unravel the nature of TA in terms of urban design. The first paper (Chapter 2) is more theoretical because it conceptualises TA within the urban environment through a comprehensive and critical review of theoretical and empirical manuscripts. The chapter is meant to serve three functions. First, it critically reveals that despite the lack of a defined theory in this specific field, TA is crucial to grasp people's sense of belonging to a place, and the conformation of urban identity. Second, it sets up the conceptual framework discussed in the following chapters. In addition, it suggests TA as an indicator of social sustainability in the urban environment, contributing to fill the gap aimed by the current urban research agenda. This chapter (paper)

¹The Continental PhD thesis consists of a collection of published/publishable articles, a brief 'personal' introduction, and a brief concluding chapter (Costall, 2018).

has already been published with co-authors in the journal *Sustainable Cities and Society* (Lara-Hernandez & Melis, 2018).

The second paper (Chapter 3) explores the definitions and uses of both informality and TA in an urban context, arguing that TA is usually overlooked and misinterpreted as a form of informal practice. By separating TA from informality, it creates a simpler model for understanding urban informality, whilst at the same time crystallising TA as a concept in its own right. Thus, it provides clarity the concept, avoiding misinterpretations. The paper challenges the existing definitions of informality as applied in studies concerning informal practices in the Global North and argues that some understandings of informal behaviour in urban settings could be better understood when viewed as forms of TA. Therefore, it pushes the concept forward, facilitating its study as a topic of research. This paper has been submitted with co-authors to the journal *Cities* (Lara-Hernandez, Melis & Coulter, 2019).

The third paper (Chapter 4) utilises assemblage theory in deep, conceptualising TA as an emerging product of other assemblages such as culture, legal framework and urban design. These approaches are drawn together by illustrating Mexico City (MCC) as an example of a highly coded city in which these assemblages emerge. A representative sample street which also is the oldest in MCC, was selected as a case-study to analyse TA in relation to the streetscape design through participant observation and image analysis of the visual complexity of the streetscape. This paper has been published with co-authors in the journal *Future Cities and Environment* (Lara-Hernandez, Melis & Lehmann, 2019).

The fourth paper (Chapter 5) analyses the urban design elements of the spatial configuration of the street that are related to the TA. Its main objective is to identify urban design elements of the built environment, supporting diversity of TA, and to explore this relationship in MCC. Through a comparative analysis, the selected case study provides an insight and contribute to a better understanding of the relationship between TA and the softness (permeability) of the built environment within heritage city centres in Latin American cities. One of the main findings is that the results contradict previous assumptions about how active façades encourage more publicness on the street, rather they show that a balanced combination of active and passive façades facilitates more diversity of TA. This paper has been published with co-authors in *Advances in Science, Technology & Innovation, Springer Book Series* (Lara-Hernandez, Melis & Caputo, 2020).

The fifth paper (Chapter 6) discusses the different flows and relationships that facilitates TA emergence, focusing in the regulatory. It takes as a case study Mexico City Centre and examines the laws and regulations set out by the government of Mexico City which regulate the use of the street. It contrasts this with the ways in which the inhabitants of the city appropriate public space on a daily basis. There is a disparity between the lack of clarity in the legislation surrounding potential activities occurring on the street, and a seemingly tacit consensus between citizens regarding how they appropriate such public spaces. We explore this contrast and outline ways in which public space is used in traditional and unexpected ways, how creative ways are found to use the street area within the spirit of the law. In other words, TA constantly emerges despite the continuous territorialisation, deterritorialisation and reterritorialisation of the assemblages. This paper has been published with co-authors in the *Journal of Public Space* (Lara-Hernandez, Melis & Coulter, 2018).

Thus, through the chapters the thesis argues that TA emerges as an assemblage product of other assemblages such as culture, urban design and the legal framework that regulates the use of public spaces. While all the chapters discuss this triad in relation to TA each of them stresses some assemblages more than others. For instance, Chapter 2 and Chapter 3 emphasise the cultural assemblage, Chapter 4 and Chapter 5 stress the urban design while Chapter 6 focusses more on the legal framework.

CHAPTER'S PREFACE

The following Chapter 2 theoretically discusses the concept of TA within the urban environment through a comprehensive and critical review. The chapter sets TA as an essential element of people's sense of belonging, constructing the urban identity. This chapter establishes the conceptual framework for the following chapters. This chapter has already been published as a paper with co-authors in the journal Sustainable Cities and Society (Lara-Hernandez & Melis, 2018). Based on the CASRAI² system the contribution disclosure comes as follows:

CRedit Roles	
Title:	Chapter 2 Understanding the temporary appropriation in relationship to social sustainability
Author	Role
J. Antonio Lara-Hernandez	Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Visualisation, Writing-original draft, Writing - Review and editing
Alessandro Melis	Conceptualisation, Formal analysis, Methodology, Supervision, Writing - Review and editing

² The Consortia Advancing Standards in Research Administration Information (CASRAI), an international, non-profit standards body based in Canada, has now created a standardized list of author contributions called [CRedit](#), which allows different journals to make use of the same list of contributor descriptions (instead of free-text descriptions), thus facilitating data analysis across various publications.

CHAPTER 2 UNDERSTANDING THE TEMPORARY APPROPRIATION IN RELATIONSHIP TO SOCIAL SUSTAINABILITY

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INTRODUCTION

The term appropriation was firstly introduced by Korosec-Serfaty in the Proceedings of the Strasbourg conference in 1976. Within the field of environmental psychology, the term appropriation is described as a temporary phenomenon that implies a dynamic process of interaction between the individual and its surroundings (Korosec-Serfaty, 1976). It is a process similar to that of humanisation, which is the fundamental societal defined meanings interiorised by the individual (C. F. Graumann, 1976). Since then, several authors such as Purcell (2002), following Lefebvre's work, Pol Urrútia (2002) with his dual model, and Yory (2003) with the theory of topophilia, have used the term to explain the theoretical link between people and places. These authors consider the appropriation as an inborn necessity of humans that can be expressed through activities that occur in the urban landscape. Public spaces are an essential part of the urban landscape and their design is therefore strongly linked to the possibility of occurring activities related to the Temporary Appropriation (TA) (Madanipour, 1996a; Moudon, 1991; Noschis *et al.*, 1978). Thus, while appropriation is a broader term, its temporary variation refers more specifically to public spaces. Although there is conspicuous literature on the more general theme of appropriation, a phenomenon that refers to a lasting and consistent condition over the years (Ramirez-Lovering, 2008; Díaz & Ortiz, 2003; Ardura Urquiaga, 2014) and, even if less, on TA, that refers to non-permanent, daily or extemporaneous appropriation (Fonseca Rodriguez, 2015; Lara-Hernandez, Melis & Caputo, 2017). The accent in the latter has always been placed on the informality of this action. The present paper intends to focus on the TA instead as a consequence of the necessity of adapting human needs of a city that deprives the population of reference points due to sudden and unexpected changes. In this last case, the temporality of appropriation becomes an essential element of flexibility, the study of which, however, still constitutes a research gap. Hence, the present paper takes into consideration the assumption that the current conjuncture crisis due to the unstoppable growth of the cities imposes a reflection on their development in terms of sustainability (Lehmann, 2015), and therefore on the adaptation of the concept of appropriation with respect to the aforementioned phenomena of growth and change.

The following section describes the essence of appropriation as a concept in relation to the social nature of the human being and within the urban context as a citizen's right.

APPROPRIATION

The Oxford English Dictionary (2015) defines appropriation as the making of a thing private property. However, within the socio-urban design fields, the use of the term has no consensus and remains vague. For instance, some authors (Ramirez-Lovering, 2008; Araya Diaz, 2016; Garcia Ramon, Ortiz & Prats, 2004; Blanco, Bosoer & Apaolaza, 2014) use the term when referring to the illegal or informal use of the public space or territory by analysing their time occupancy, utilised design elements and their daily routes. Nevertheless, it is ambiguous to refer to the appropriation as both an illegal and informal use of the public space since it belongs to the citizens, and so does its use, and because for most of the governmental authorities, such as the Mexican ones, the informality is usually linked to informal commerce.

However, this text starts from the assumption that appropriation of the built environment is an inborn socio-spatial special need of the individual (Graumann, 1976; Yory, 2011). Lefebvre (1971) argues that the concept of appropriation is one of the most remarkable results that centuries of philosophical reflections have bequeathed. He describes appropriation as the goal of the social life by claiming that the domination of the natural environment without the appropriation tends to be absurd. Yory (2011), corroborates this argument by stating that we as humans are connaturally engaged with the construction-appropriation of our environment. Moreover, the concept of appropriation is embodied in his theoretical definition of topophilia as “the act of co-appropriation generated between the man and the world; through which the world becomes the world, at the opening realised by the man within its historic-spatial nature and human becomes human through its spatialisation” (Yory, 2011:p.45).

Regarding the urban landscape, the appropriation can also be defined as the interaction between citizens and their city expressed through certain kinds of activities occurring in public spaces (Lara-Hernandez, Melis & Caputo, 2017). These activities contribute to the edifice of the social urban landscape, which is embedded in the second aspect of the right to the city. The Lefebvrian Purcell (2002), argues that the appropriation allows citizens to produce urban space rather than just to use the already produced urban space. The appropriation is what gives citizens the right to fully use and manage their everyday life within the urban environment (Lefebvre, 1992). Graumann (1976) contributes to reinforce that position by stating that the

appropriation of the public space is a medium and a goal in order to overcome human alienation. Thus, it can be inferred that appropriation of space that is ephemeral and time framed could be understood as TA, in which the design of the built environment is necessary but not sufficient (Graumann, 1976). Along the same trajectory, Martinez (2014) emphasises that the TA relies on both the configuration of the built environment and the meanings and implicated relationships (people's values, behaviours and actions) of the social life in the city.

It follows that the TA is an individual, social, and spatial need that cannot be underestimated when it comes to urban studies.

Temporary appropriation vs use of the space

The previous section has highlighted the significance of the TA and its relevance to the urban context by establishing the bond between people and places: through a set of activities occurring in public spaces. However, the question of what these activities are is still pending. In a strict sense, when we use the public space, we are appropriating it, although it is just for a second. Torres (2009) considers the use and the appropriation of space to be similar concepts by claiming that as far as the individual exists, he is appropriating the space. Other authors (Vidal Moranta & Pol Urrútia, 2005; de la Torre, 2015; Pol Urrútia, 2002; Pol & Iñiguez, 1996) instead suggest that the use and the appropriation of the space are adjacent concepts, not similar though. They argue that the appropriation plays a key role to conform the urban identity through individual and collective activities in the urban environment, by claiming that the users only appropriate public spaces where they feel identified. This position is supported by studies done by Franck and Stevens (2007), whose interview results illustrate how regular users appropriate a specific area of a public space on a daily basis because they felt it to be comfortable.

A definition of the potential uses is provided by Fonseca Rodriguez (2015) when she describes the TA as “the temporary act in which people use public spaces to carry out individual or collective activities other than the purpose that the space was originally designed for.” This definition helps, in fact, to distinguish between the activities related to the appropriation and the simple use of the space. One can see how this position is aligned with what Seghezzeo (2009) calls *persons*, as one of the fifth dimensions of sustainability that will be discussed further, and differs from the definition used by Leary-Owhin (2015), and influenced by Lefebvre, that describes the TA as a time span condition by differential spaces in the urban context.

Nevertheless, not all the activities that a public space could host are a spatialised expression of the TA. One of the main challenges is in fact to identify the activities taking place in public spaces that are relevant for the phenomenon according to their social, cultural and environmental context-specific nature. Consistently with scholars such as Crossa, Drummond, and Monnet, it is possible to group into three different categories the activities that can be considered as an expression of the TA:

- Activities related to the economy (Crossa, 2016, 2009; Loukaitou-Sideris & Ehrenfeucht, 2009; Kim, 2013; de la Torre, 2015). See Figure 2-1: (left) Man selling in streets in Palermo City Centre; (right) Man selling candies in Mexico City Centre (Source: Authors)..
- Activities related to leisure such arts and sports (Díaz Larrañaga, Grassi & Mainini, 2011; Drummond, 2000; Hernandez Mendo & Morales Sanchez, 2008; MacDonald & Shildrick, 2007; Simpson, 2011; Mouffe, 2014; Seaman & McLaughlin, 2014). See Figure 2-2.
- Activities related to sacralisation (Portal, 2009a; Monnet, 1995). See Figure 2-3.

Table 2-1 summarises the activities in which people temporary appropriate the public spaces.

Table 2-1: Activities in the public space related to temporary appropriation (Source: Lara H., Melis, & Caputo, 2017).

Category	Economy		Leisure		Sacralisation
Description	Any activity in which a person or group use the public space in order to obtain an economic benefit directly or indirectly.		Any activity in which a person or a group use the public space for leisure purposes.		Any activity in which a person or a group use the public space for religious purposes.
Sub-category	Work	Trade	Sports-games	Artistic expressions	Rest
Individual or collective	Advertising or promoting services, waiting, engaging or attracting possible clients.	Selling or buying products (food, hand-craft, clothes, etc.)	Skateboarding, soccer, cards, marbles, hopscotch.	Playing music, dancing, painting, acrobatics, reciting and singing.	Eating, resting
					Processions, praying, lighting candles and putting flowers.



Figure 2-1: (left) Man selling in streets in Palermo City Centre; (right) Man selling candies in Mexico City Centre (Source: Authors).



Figure 2-2: (left) Men watching football match in the street in Palermo City Centre; (right) Woman cooking in street in Mexico City Centre (Source: Authors).



Figure 2-3: (left) Altar in street in Palermo City Centre; (right) Altar in street in Mexico City Centre (Source: Authors).

Temporary appropriation and place

Although in theory, every space could be temporarily appropriated. It is not clear, however, which spaces are suitable to be appropriated or why. Within this context, Franck and Stevens (2007) have introduced the definition of “loose space” which is strongly related to people’s perception of the potential activities suitable for a certain public spaces. They argued that an urban public space can only become loose when people recognize the possibilities in it and utilize those possibilities for their own will, carrying out different activities which are not originally intended for those locations. The possibility, diversity and disorder are the most remarkable virtues of the loose space. Even if the novelty of the looseness of public space is highly relevant worldwide, the activities that make the loose space emerge could be broad and not specifically the categories that characterise the TA. The TA seems to occur in what Relph (1976) defined as place, which is a centre of action; a blend of human and natural realms and the core of our prompt experiences of the world. In other words, place is a part of space occupied by a person or a thing and it is endowed with meaning and cultural value (Madanipour, 1996a). This meaning refers to the symbolic and imaginary attributes that people have about a determinate place, building or urban element and what they represent for them (Rapoport,

2005). Moreover, the place is embodied by the cultural landscape in which the individual plays a key role in its conformation (Hubbard *et al.*, 2002; Seghezzeo, 2009). This view is supported by several authors such as Graumann (1976, 1983), Pol Urrútia (2002), Vidal Moranta (2005) and Martinez (2014), that claim that people temporary appropriate public spaces where they feel identified or somehow represented by. In addition, researchers of environmental psychology, such as Vidal Moranta and Pol Urrutia (2005) argue that the place that is appropriated is considered as a factor of continuity and stability of the self, in parallel to another factor that contributes to the identity and group cohesion. In conclusion, the TA takes place in urban public spaces in which an individual or group of individuals feels culturally identified.

Temporary appropriation and culture

As stated in the previous paragraph, the TA is activated by the sense of belonging whose nature is predominantly cultural. However, the term culture is subject to different interpretations depending on the discipline. The Cambridge Dictionary (2018) defines culture as “the way of life, especially the general customs and beliefs, of a particular group of people at a particular time”. The Oxford English Dictionary (2018) defines culture as: 1) the arts and other manifestation of human intellectual achievement regarded collectively, 2) the ideas, customs, and social behaviour of a particular person or society. Bonfil Batalla (2004) proposes a broader definition, stating that culture means the group of symbols, values, attitudes, skills, knowledge, meanings, communication ways, social structure and physical objects that make possible the life of a determinate society. Also, they allow the transforming and reproducing of the culture through next generations. Although culture is a vast domain, we can imply that the built environment is part of it, a subset of it. Moudon (1991) claims that the built environment is a high-pitched display of cultural specificity by claiming that each type of society generates a particular behaviour and it is reflected in the way they use the space through activities. For instance, in the Netherlands, the boundaries between people’s public and private lives are very strict and public space is the space of strangers, for the spontaneous and superficial gather (Haan, 2005), while in Mexico the public spaces are constantly temporary appropriated and these boundaries could be blurred or overlapped (Monnet, 1995). Within the afforded mention subset, there are system of activities and system of settings, in which the design configuration of the space plays an important role. According to Rapoport (1998) any activity occurring in public spaces (including TA) can be dismantled into four elements; the activity itself, the way which the activity is carried out, how it is associated with other activities and combined into

activity systems and the meaning of the activity. Kyle et. al (2014) imply that activities which occur in the urban space constantly repeated over certain periods of time help to construct the identity and bonding between place and individuals. These activities appearing in a more or less harmonious manner, each one of them pursued by its own individual sake, is what produces culture (Eliot, 1949). Thus, we can infer that culture is a dynamic condition in which activities over time attain culture, but these activities also are a reflection of any specific culture.

In this respect, the appropriation relates to the social sustainability as initially defined in the Brudtland report (1987). Hence, within the urban context, urban social sustainability aims to not compromise the social needs that the built environment can satisfy for future generations. Consequently, the aim of this paper is to illustrate and explain the relationship between these two concepts, the TA and social sustainability on their theoretical and practical basis. The following section illustrate the concept of social sustainability within the urban scenario.

URBAN SOCIAL SUSTAINABILITY

The previous paragraphs described the three main groups of activities that characterise the TA in the public spaces as a spatialised expression and described where the TA occurs, and its relationship with the conceptualisation of culture. Following the Brundtland report (1987), several scholars (Seghezzeo, 2009; Woodcraft, 2012; Lozano, 2008; Dixon *et al.*, 2009; Dempsey *et al.*, 2011) refer to the aforementioned relationship as core aspects of the social and environmental sustainability. The present section will therefore focus on the social sustainability concept within the urban context and illustrates its relationship with the ideas already expressed.

According to Brundtland's three pillars of sustainable development, several authors, such as Constanza (1992), Kleine (2009), Munasinghe (1993) and Spindler (2011) have provided a number of definitions for Environmental, Economic, and Social Sustainability. However, Seghezzeo (2009) suggests that this triad provides a narrow perspective because it overestimates the explanatory power of economic reasoning and it does not pay attention to fundamental aspects of development. In turn Vallance et. al. (2011) also argue that sustainable social development should be addressed first rather than the environmental or economic. In this regard, they have introduced a category of three different groups in which advocates of social sustainability within the urban context have discussed the topic. This categorisation comes as follows: first, development social sustainability that deals with issues ranging from access to fresh water and food, medicines and shelter to equity and justice. It is expected that the benefits for the

environment will come once these basic needs are satisfied, that is a similar argument to Maslow's hierarchy (1943). Second, bridge social sustainability, which seeks to identify the social conditions needed in order to support ecological sustainability. These conditions are classified into two main groups, the transformative approaches, which re-think the relationship between people and environment by challenging fundamental ideas about how the environment is socially constructed, and the non-transformative, which propose to do things in a different manner without an ideological change in society, such as the use of technology, i.e. the use of electric cars. Lastly, maintenance social sustainability which is burden in socio-cultural predilections and attributes and the environment are preserved over time. However, in this arrangement the concept of social sustainability is under the scope of aiming to create social consciousness towards the impacts of human actions on the natural environment, rather than conceptualise how the socio-cultural fabric could be sustainable. Moreover, this arrangement does not recognise the spatial needs of the individual because the human component is represented by society as a whole.

Social sustainability within the urban context aims to not compromise the social needs that the built environment can satisfy for future generations. It is a combination of designing both physical and social realms, infrastructure to support social and cultural life (Woodcraft, 2015). Dempsey et. al. (2011) argued that social sustainability within the urban context strongly relies on two main aspects: social equity and sustainability of community. The first aspect is frequently associated and measured by the accessibility to key facilities that satisfy basic needs within a determinate area (Barton, 2002; Burton, 2000). Nevertheless, social equity is also commonly associated with the inclusion of all members of society without distinction, in which the citizen's appropriation of the public realm is seen as an alternative to mitigate urban segregation and social exclusion (Pol, 2002). The second aspect is frequently related to the formation of community and its level of social interactions between people, in which he points out that people living in a determinate area that do not socially interact between them are not a community, they are just people living separate lives with little sense of pride or place attachment (Dempsey, 2006). Studies carried out by Seaman and McLaughlin (2014) suggest that the more interaction between individuals and their outdoor environment, the higher levels of place attachment and sense of community. Lofland (1998), in her seminal book, describes the relevance of the social territory within the urban environment by claiming that the public space in the city is where the public realm is created. Thus, following both arguments, we can imply that the same occurs in the relationship between people and their built environment, meaning that people who do not

interact (or are deprived from interactions) with their public spaces within their cities might not be called citizens.

Returning briefly to the pillars of sustainability, other researchers such as Valentin & Spangenberg (2000), Hawkes (2001), Deakin et. al. (2007) and Lozano (2008) have added a fourth pillar. This new added pillar strives basically on two main concepts, which are governance and culture, with other featured variations such as justice and well-being (Ali-Toudert & Ji, 2017). Also, Musacchio (2009) proposes a model to achieve sustainability based on six concepts, she calls them the six Es, which are aesthetics, environment, ethics, equity, experience and economy. On the one hand, these sustainability models could be applied to conceptualise different urban scales such as region, city and neighbourhood, since they all recognise the importance of the social realm. On the other, they fail due to the fact that they acknowledge the social realm as being represented by society as a whole and not as a set of individuals which is the level of public space. Furthermore, none of them take into account the value of time, since sustainability is dynamic rather than a static state (Antrop, 2005). Thus, under this view, the quintet proposed by Seghezzeo (2009) is more accurate because it is formed by “place, permanence and persons” in which place stands for three-dimensional physical and geographical but also a cultural landscape, permanence is referred to the temporal dimension, and lastly persons, as the individual’s part of a society. Figure 5 illustrates the model already described.

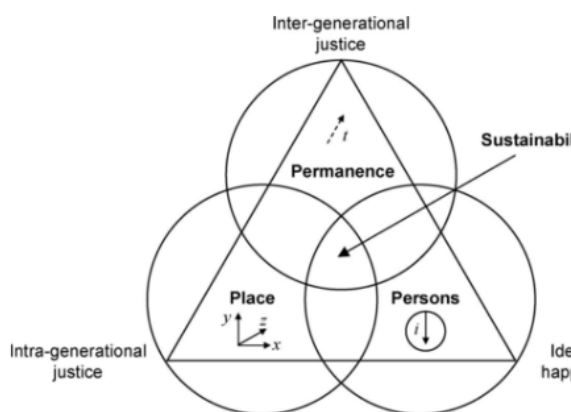


Figure 2-4: The five-dimensional sustainability triangle (source: Seghezzeo, 2009).

Thus, urban social sustainability could be interpreted as an umbrella term that encompasses the economic, social and environmental realms of cities. It is a way in which cities and societies are organised in order to accommodate the needs of the current and future generations without compromising the ecological environment (Vojnovic, 2014). As explained earlier this combination involves the design physical and social realms (Woodcraft, 2015). Capel Saez

(2002) implies that the social and the physical realm are elements of the urban landscape. Antrop (2005) supports this argument by emphasising that the urban landscape is the overlapping of landscapes, such as cultural and architectural landscapes which are in constant change because they are the dynamic expression of interaction between cultural and natural forces in the environment. Moreover, according to Musacchio (2009), the urban landscape is a system that is reshaped constantly by people according to their necessities. Also, she claims that the heterogeneity of a designed landscape such as public spaces, is influenced spatially and functionally by people's values, behaviours and actions, thereby through appropriation.

Urban sustainability and culture

As mentioned earlier, Seghezze (2009) argues that sustainability has five dimensions; *place*, *permanence* and *persons*. The first three dimensions corresponds to the place, as explained earlier is the space where the identity of the place and the cultural values are transmitted. Researchers in the field of culture, such as Rapoport (1998), Kent (1990), Holahan and Bonnes Dobrowolny (1979) argued that a place could be defined by the activities of individuals that occur in it and many of those may defy the passing of time, thus emphasising the theoretical link between place, the person and time through particular activities occurring constantly. In addition, the latter leads us to the second dimension which is permanence. It adds the value of time to the concept of place because places are in essence culturally constructed and related to events or things that occurred at various, sometimes remote points in history. Advocates of design and behaviour studies such as Lawrence and Low (1990) argue that time plays an important role, and should be taken into consideration to understand the different dimensions of the space (e.g. spatial, cultural, social, personal). Lastly, the dimension of persons which stress the individual as a part of the society rather than over impose the concept of society as a whole without an individual recognition. This awareness of the individual entity within its close relationship with the concept of place are aligned to Graumann's definition of appropriation already mentioned in the INTRODUCTION section. Thus, by adding the dimension of time, this suggests a strong link may exist between the concept of TA and urban sustainability.

Urban sustainability studies

Studies with focus on social sustainability have been accomplished at different urban scales. For instance, Forman (1997), Wheeler (Wheeler, 2000), Knippenberg (2007), Cuthill, (2010) at

regional level; Girardet (1999), Nijkamp and Perrels (1994), Roseland (Roseland, 1997) Dempsey et. al. (2011), Dixon et. al. (2009), Burton (2000), Yiftachel & Hedgcock (1993b) and Sharifi & Murayama (2013) at the city level; Pongmas (2004), Chiu (2003), Ancell & Thompson-Fawcett (2008), Bramley & Power (2009), Opp (2017) and Raman (2010) at neighbourhood level. However, authors (Mehan & Soflaei, 2017; Shirazi & Keivani, 2017) argue that studies focused on urban social sustainability at the microscale level (public space) are the less explored. For instance, studies focussed on squares exploring strategies for regeneration aiming to achieve social sustainability (Mehan, 2016) and studies focused on determining the social function of the square (Harun *et al.*, 2014). Mehan (2016) concludes that the preservation of the historical identity is one of the major contributing approaches of urban regeneration strategies to achieve social sustainability in public squares with historical value. Results of a multi-layered study by Harun, Zakariya, Mansor, & Zakaria (2014) suggest that a high diversity-range of activities in which people temporarily appropriate the public space contributes to the social sustainability of the site. Hence, the physical dimension of the environment and the TA of the public space are associated with social sustainability. Mehan and Soflaei (2017) attempted to link theory and practice in the social sustainability field by incorporating Maslow's hierarchy of human needs into the urban environment. They argue that spatial qualities of the design of the built environment can be made in reflecting these needs. Table 2-2 summarises their claims.

Table 2-2: Translation of the human needs to spatial qualities in an urban context (source: Mehan & Soflaei, 2017)

Human Needs Residents	Spatial Qualities in Urban Design
Physiological Needs	Comfort/Public Services/Firmness and Balance
Safety Needs	Privacy/Legibility/Safety
Belongingness/Love Needs	Social Amenities/Social Facilities/Sense of Place and Identity
Esteem Needs	Inclusiveness/Preservation of the Local characteristics
Self-Actualization Needs	Diversity/Public Participation
Beauty Needs	Visual Richness/Visual Proportions/Visual Distinctiveness

Despite this attempt, Maslow's theory has a fundamental critique. First, it has been argued that Maslow's theory only applies to pluralistic societies (Western) which make it culture-specific rather than universal in the application (Neher, 1991). Secondly, in advanced societies, the first two steps of Maslow's needs are often satisfied, whereas the following steps (love and self-esteem) represent a challenge; contrary to what occurs in simpler societies (Turnbull, 1974).

Therefore, it could be risky to apply such an approach in cities that hold a multi-diverse and ancient cultural background, such as Latin American, Mediterranean or Asian cities.

THE MISSING LINK

The previous sections explain how TA and urban social sustainability are interrelated concepts, in which the cultural factor plays a determinant role. Figure 2-5 summarises and illustrates this relationship deeply. Firstly, the diagram highlights in colours different research fields that have approached both concepts ranging from architecture (also includes urban planning, landscape and urban design), to environmental sciences and social sciences. Secondly, it identifies the different type of sources based on their relevance for the purpose of this text such as: key paper, seminal paper and theory. Lastly, it shows the links between the different sources and their relevance for the present paper, the darker colour of the name and symbol the more pertinent for this research.

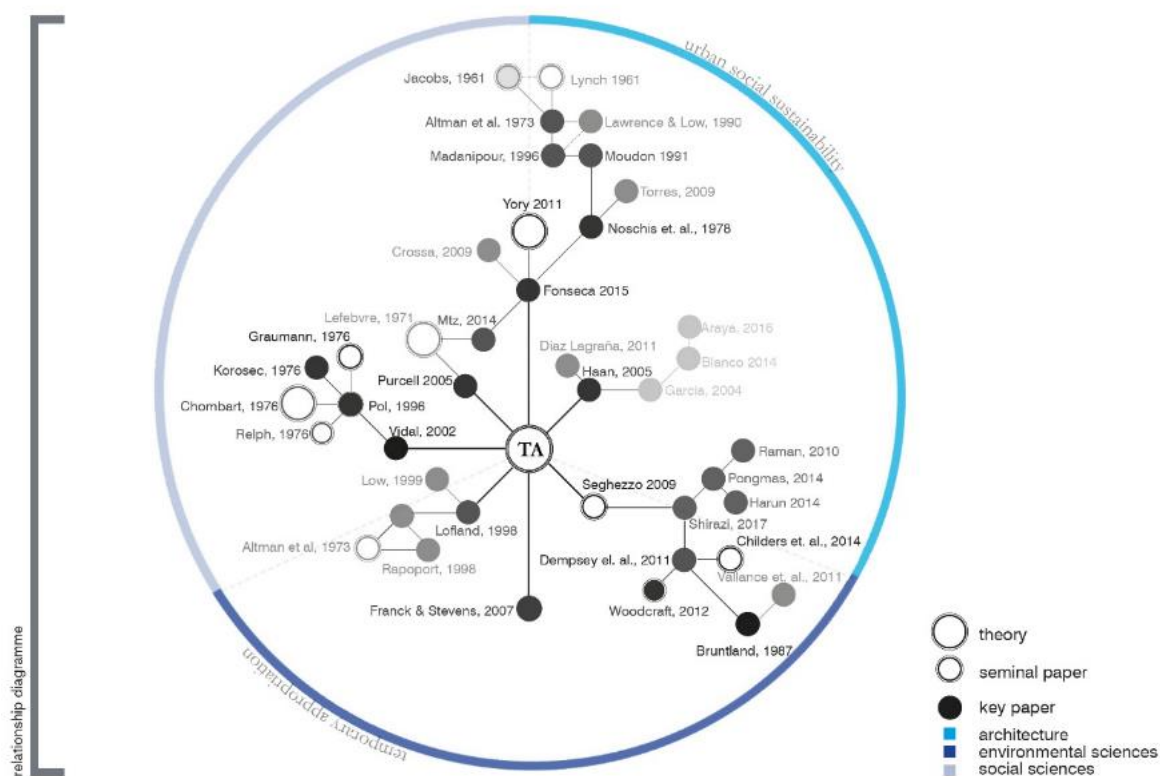


Figure 2-5: Temporary appropriation and urban social sustainability diagram

DISCUSSION AND CONCLUSION

An initial objective of this paper was to illustrate the relationship between two complementary concepts, the TA and the social sustainability. The first section has discussed the relevance of the TA for the social construction of the urban landscape. It has been explained that the TA occurs in public spaces with meanings and values being socially constructed, which are places. In addition, it has categorised drivers into three main groups by illustrating examples from different cities and cultures. It has been pointed out that the dynamic and reciprocal condition between TA and culture, in which the value of time plays a key role for its formation, transition and preservation of cultural values within the urban environment.

The second section established urban social sustainability as one of the key concepts for sustainable development. Social sustainability is cross-disciplinary, multidimensional and strongly correlated with other aspects of the built environment, such as design. Moreover, the complexity of the multidimensional concept allows for the developing of case-specific and place-specific research, which suggests that each study focussed on social sustainability should be specific for every particular context. Several authors (Clark & Dickson, 2003; Kates *et al.*, 2001; Antrop, 2005) have claimed that the study of sustainability will be benefited from multi-disciplinary approaches such as the one presented here. Hence, the study of the TA of public space is context specific since it is strongly related to the social aspect of the urban landscape, and social aspects are essentially scale-based studies. Moreover, the improvement and maintenance of the physical dimension of the environment are widely accepted as a strategy to achieve social sustainability.

However, further studies need to be carried out in this field of research. This paper has argued that there is a strong link between the TA and social sustainability. It has been proved to be a complementary relationship, as previously illustrated in Figure 2-5. In addition, it has identified that the TA of public spaces is a phenomenon that plays a key role in the urban dynamics by contributing to the construction of the social landscape of the city. Moreover, the processes of the social landscape in a city are strongly linked to the resilience of an urban environment (Childers *et al.*, 2014). In general, therefore, it seems that the design of public spaces has implications towards the TA. We agree with researchers such as Kates *et al.* (2001) and Clark & Dickson (2003) to push further the need of studies about human transformation as essential to the science empirical agenda for the common interest.

Overall, this study strengthens the idea that the TA could be an indicator to assess the urban social sustainability in any specific context. These findings have significant implications for the understanding of how the design of the built environment could have the capability to allow the TA for future generations, which is one of the main aims of the urban sustainability. This work contributes to existing knowledge of social sustainability by providing the TA as a medium to study the urban landscape at the scale of the public spaces. Within the field of architecture (landscape, urban design and planning), more information on the design features of the built environment related to the TA in any determinate context would help us to establish a greater degree of accuracy on this matter. The scope of this study was limited in terms of urban scale due to it being focused at the level of the streetscape. In terms of direction for further research, further work could be focussed in other urban scales such as neighbourhood, districts and cities. It would be interesting to identify and categorise the TA in cities with different cultural characteristics and weather conditions than the ones illustrated here. It will be interesting to assess the effects of TA in relation to well-being, sense of community or even crime perception. There is, therefore, a definite need for a deep understanding of the TA and its relationship with the sustainability of any socio-cultural landscape.

CHAPTER'S PREFACE

The previous chapters have described the concept of TA, providing a theoretical framework needed for understanding such urban phenomenon. However, TA is commonly misinterpreted and associated to informal practices occurring in public spaces. Thus, the following Chapter 3 explores the definitions and uses of both informality and TA in an urban context. It disassociates TA from informality, providing a model that simplifies the understanding of urban informality, whilst recognising TA as a concept in its own right. To do so, the chapter challenges the existing definitions of informality as applied in studies concerning informal practices in the Global North and argues that some understandings of informal behaviour in urban settings could be better understood when viewed as forms of TA. In addition, the chapter pushes the concept forward, crystallising the concept as a topic of research. This paper has been submitted with co-authors to the journal *Cities* (Lara-Hernandez, Melis & Coulter, 2019). The contribution disclosure comes as follows:

CREdiT Roles	
Title:	Chapter 3 Temporary appropriation and informality: a nuanced relationship
Author	Role
J. Antonio Lara-Hernandez	Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Visualisation, Writing-original draft, Writing - Review and editing
Alessandro Melis	Formal analysis, Supervision, Writing - Review and editing
Claire M. Coulter	Investigation, Visualisation, Writing - Review and editing

CHAPTER 3 TEMPORARY APPROPRIATION AND INFORMALITY: A NUANCED RELATIONSHIP

Lara-Hernandez, J. A., Melis, A., & Coulter, C. M. (2019). Temporary appropriation and informality: a nuanced relationship. *Cities* (Elsevier).

INTRODUCTION

Informality has become a major area of interest within the field of urban sciences, and there is a growing body of literature that recognises the potential benefits of informality for the worldwide urban agenda (Sarmiento & Tilly, 2018; Kuppinger, 2019; Pasquetti & Picker, 2017; Moatasim, 2018; Georgieva, 2018). Yet informality is difficult to define, and temporary appropriation (TA) is often seen as merely another form of informal activity. Among the challenges faced by researchers is first to define informality within the urban agenda, and second to identify and categorise the different forms of informality in cities (Devlin, 2017; Marx & Kelling, 2018). Following on from this, finding out where informality and TA intersect and overlap is a challenge in itself.

Looking at informality, Holston (2008) states, "...in the process of building their residential spaces, [informal actors] not only construct a vast new city, but on that basis, also constitute it as a polis with a different order of citizenship" (2008:p.311). Some scholars (Roy & Alsayyad, 2004; Roy, 2012; Lucia Bayer, 2016; Caldeira, 1996) have described informality as urban practices outside of the legal and economic framework, others (Mayer, 2007; Kinder, 2014) have associated the concept as being part of bottom-up counter strategies against liberal policies, and others as a tool through which urban residents produce the city (Lydon *et al.*, 2012, 2014). Despite the differences between the approaches, all of them indirectly refer to spontaneous and unplanned activities in public spaces as informal practices. Naming a condition allows activist-scholars to shed light on what this condition implies for those living 'in it' and, in the best cases, to empower them (Peattie, 1987) and yet the definitions of the term informality given above connote a binary condition which does not reflect the full gradient of urban life.

TA on the other hand isn't necessarily informal. In its essence it refers to a process whereby public space is 'borrowed' on a time-limited basis. Although generally informal in practice, formalised examples of TA do exist, and include licenced busking such as on the London Underground, licensing for sidewalk vendors as recently introduced in senate bill 946 in California, and pop-up markets, Christmas markets, farmers' markets and other time-limited events in held in public spaces. What is significant here is that the activities which are appropriating

public space are temporary in nature, regardless of how formally or informally they were organised.

In this paper we seek to explore the definitions and uses of both informality and TA in an urban context. It is not the aim of this paper to discuss the concept of informality within the urban realm, which has been widely discussed elsewhere (Roy & Alsayyad, 2004; Roy, 2009, 2012; Auerbach *et al.*, 2018; Holston, 2008; Sarmiento & Tilly, 2018; Boer *et al.*, 2017; Anon, 2004; Lutzoni, 2016). Instead we are deliberately not considering informality as a model of expansion of informal cities (referring especially to the growth of suburbs, or settlements around the formal parts of the city). We are instead focusing on TA - the informal behavioural patterns of the people occupying public spaces within the formal city. We will explore how informality and TA have been conflated, and provide a clear understanding of why they are in fact different. We will see that TA is more than just a subset of informal activity, and that this understanding of TA is significant for advancing our understanding of how public spaces are utilised on a day-to-day basis in different urban contexts

DEFINING INFORMALITY

It is difficult to find a common definition of informality; a definition common to different major languages and cultures can be constructed, but loses some of the nuances present in the different original definitions. The Oxford English Dictionary (OED, 2015) defines the informal as 1) not done or made according to a recognized or prescribed form; not observing established procedures or rules; unofficial; irregular and 2) characterized by absence of formality or ceremony; casual, relaxed. Merriam-Webster (2018) similarly refers to the informal as being 1) marked by the absence of formality or ceremony, or 2) characteristic of or appropriate to ordinary, casual, or familiar use. Looking beyond the Anglophone world, it is interesting to compare how informality is defined in other major European languages. The Real Academia Española (2017) defines *informal* in Spanish as 1) the quality of being non-formal and 2) banned action because of its informal condition. In German, Duden (2018) defines *informell* as 1) something without a formal assignment and 2) something lacking formality, or which is non official. Treccani (2018) defines the term *informale* in Italian as something which is non-official, whereas in French, *informel* will be a new addition to the 9th edition of the *Dictionnaire de l'Académie française* (2018), showing how this concept has come to prominence since the previous version of the dictionary was published in 1935. In Polish *nieformalny* is defined as something 1)

inconsistent with applicable regulations, and 2) not having an official character (PWN, 2018). Finally in Dutch *informeel* is defined as 1) non-formal, unofficial and 2) provisional, non-binding (Van Dale, 2018). Despite the similarities between the definitions across the different languages, there is no definitive definition. All of the definitions refer to a lack of formality, many stress unofficial or irregular behaviour, a few imply prohibited actions and only one implies a temporary action. Although the selection of languages given here are purely European in origin, it does show that even within a relatively small geographical area the definition of informality is not consistent or fixed. Thus, it is not surprising to find a similar lack of consistency between definitions of informality in urban research (Marx & Kelling, 2018; Devlin, 2017; Holston, 2008). Informality is generally conceived as a dynamic, resilient and adaptable kind of urbanisation occupying voids left by the incapacity and the indifference of the government (Devlin, 2017; Cordera, Ramirez Kuri & Zlccardl, 2008). However, distinctions between types of informality are made, and value is attributed differently depending on the context in which informality is perceived to be found. For instance, Devlin (2017) argues that the literature in the “Global North” regarding urban informality is not as rich as the one from the “Global South”, claiming that academicians and practitioners have not produced much empirically grounded work on informal spatial practice. Marx and Kelling (2018) support this argument claiming that urban theory embraces informality as a predominantly “something” for understanding “non-western” cities. We would argue that these statements show a narrow understanding of informality, seeing it as a process that can only occur within an informal settlement. They fail to recognise TA as a possible form of informal activity which occurs within the formal city and which takes place regardless of the socio-economic setting, a point which will be discussed further later in this paper.

URBAN INFORMALITY

Regarding urban studies, the analysis of informality has largely been directed at processes or practices that challenge the established formal system. The term urban informality usually refers to the illegal condition of land occupation for housing purposes by poor and marginalised people (Roy, 2005; Rios, 2014; Roy & Alsayyad, 2004; Lutzoni, 2016). It can also refer to the “informal sector,” encompassing a broad set of people and practices defined by economic assessments of their types of employment and main sources of income (Binelli, 2016; Cordera, Ramirez Kuri & Zlccardl, 2008; Duhau & Giglia, 2007; Crossa, 2016). Bayat (1997) argues that poor people have the aspiration to belong, and to practice an integrated life, as long as they can

afford the social, cultural and economic cost. The disenfranchised seek a form of redistribution that ensures survival, better material living conditions, and the autonomy to obtain public goods e.g. possessing land illegally and constructing forms of shelter. The poor in Middle Eastern countries justify their acts of transgression by articulating a moral language or urban politics, which is similar to cases in Latin America (Sen, 1999).

Looking beyond the Global South, Devlin (2017) points out that there are two different types of drivers for informal practices, first the acts undertaken by the urban poor in order meet basic needs and to survive, and secondly those engaged in by more well-off residents for convenience, efficiency, or creative expression. The former is defined as the “informality of need” while the latter as the “informality of desire”. The risk inherent here is that Devlin views both forms of informal practice under the same terms, and makes the tacit assumption that all expressions of informal acts are politically neutral, organic or bottom-up, which in turn has the potential to lend endorsement to neoliberal projects of de-regularisation and state retrenchment (Kinder, 2014; Iveson, 2013).

Furthermore, Devlin (2017) categorises studies of informality in three different groups: informality as everyday authenticity, as best practice, and as (Lefebvrian) cry and demand. The first group represents advocates such as Jacobs (1961) and De Certeau (1984) who drew attention to dimension unseen by the planners and designers who were missing the social landscape of the streets. The second group corresponds to advocates such as Deleuze and Guattari (1989). Although their theoretical discussions never refer to informality per se, they criticise formal structures of planning and administration (Bogue, 1991). It is characterised by practitioners encouraging citizens to appropriate the urban realm through creative and informal practices. Lydon et al (2014) and their Tactical Urbanism strategies are a good example of this group. Lastly, the third group is divided in two sub-groups: DIY (Do-It-Yourself) Urbanism, and the group of studies referring to community gardens in the USA, Canada and European cities. Both sub-groups are devoted to the notion of the commons and the conflict between use-value and exchange-value of urban space described by Lefebvre (Devlin, 2017). These categories of informal use range from housing to leisure activities, sharing a Lefebvrian conceptualisation of the politics of spatial production. Devlin argues that direct actions from informal actors aim to fulfil a collective need expressed through social disobedience against property rights. There is a “cry and demand” from urban residents to undertake planning without the state, which is assumed to be a regressive force captured by and serving capitalist interests (Purcell, 2016).

Marx and Kelling (2018) categorise informality in the field of urban studies differently. They identified three main approaches in how Anglophone researchers have studied the phenomena in the “western world”: informality as a condition, as a law and as a currency. Informality as a condition is the most common way of thinking about informality. For instance, UN-Habitat (2009; 2013) defines informality on the basis of the nature of property rights, planning, infrastructure and level of services. Marx and Kelling (2018) criticise this view by arguing that it leads to debates about precision and reliability, rather than exploring the reasons about why and how they are applied. Informality as a law is associated with legal pluralism, which holds that plurality of legal systems co-exist, such as state law, religious law, indigenous law, customary laws and local conventions. In such a plural realm the law of the state is not necessarily the dominant one. Furthermore, the state might not be able to have the capacity to enforce the law (McAuslan, 2006). It follows that what is conventionally taken as formal could be considered as informal and the other way around. Thus, it requires more empirical and detailed analysis to understand the context, especially where it assumes a fluidity and coincides with instances of TA. Lara-Hernandez and Melis (2018) support this argument by arguing that the cultural dimension plays a decisive role in how people make use of spaces. Despite this, it is impossible to escape from the fact that, even though non-governmental regulations may form the dominant structure, there is still some sort of a legal apparatus in operation. Lastly, informality as a currency acknowledges that the informal nature of what is happening in a given situation may not be the most significant feature of this activity. Human practices are socially constructed either through formal or informal routines/norms/rules and these actions have socio-political currency. Informality as currency takes a relational perspective, emphasising flux, changes and dynamic conditions, while still recognising regularity e.g. the ambiguity and even contradictory condition of regulations over the use of public spaces in cities (Lara-Hernandez, Melis & Coulter, 2018). Thus, informality is the opposite of formality, but does not necessarily mean that there is an absence of form or lack of organisational order. This approach acknowledges the local dynamics and relations of the context and specially place towards informality rather those ones coming from neoliberal impulses. These local dynamics and relations occurring in the urban environment are highly relevant for studies focused on informality. Rapoport (2005) states that such studies should take into consideration the interplay between people’s activities in their built environment, which is strongly linked to culture. For instance, an easy and extreme example would be a house. He provides an example based on housing by comparing the traditional western setting with a tribal one.

Figure 7 illustrates how different activities that take place inside house “A” may occur in a widely dispersed system of settings in the case of house “B”. Thus, the units to be studied are not the houses themselves but the system of settings within which particular systems of activities take place. This type of conceptualisation makes a huge difference because it enables us to see the striking disparity between the uses of the two different houses and by extension the use of the street, the neighbourhood and so on.

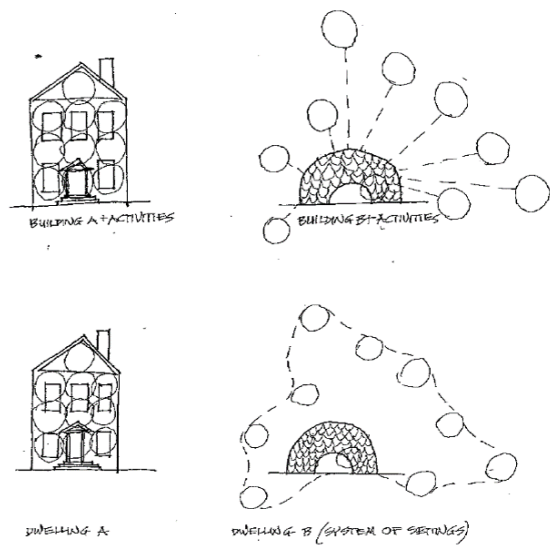


Figure 3-1: Housing types and activities (source: Rapoport, 2005)

In view of all that has been mentioned so far, one may suppose that what could be described as informality in a given context could really be just a different reflection on local dynamics, and relations between people and their built environment. We would like now to explain how TA can be considered as an expression of these local dynamics occurring in the urban environment, explaining in more depth the nature of TA as an urban phenomenon.

TEMPORARY APPROPRIATION

People have an inborn socio-spatial special need to appropriate the built environment (Graumann, 1976; Yory, 2011). According to Lefebvre (1971), the concept of appropriation is one of the most remarkable results that centuries of philosophical reflections have bequeathed. Appropriation is the pinnacle of a social life; without appropriation our domination of the natural environment would be absurd. Yory (2011) supports this by arguing that for humanity the construction-appropriation of our environment is something inherent and connatural. The

concept of appropriation is implicit in his theoretical definition of topophilia as “the act of co-appropriation generated between the man and the world; through which the world becomes the world, at the opening realised by the man within its historic-spatial nature and human becomes human through its spatialisation” (Yory, 2011:p.45). Whereas humanisation is where the individual internalises a set of fundamental societal defined meanings (Graumann, 1976), appropriation, as an inborn necessity of humans, can be expressed through activities that occur in the urban landscape. Authors such as Purcell (2002), Pol Urrútia (2002) and Yory (2003) have drawn respectively upon Lefebvre, the dual model and topophilia to use appropriation as a term to explain the theoretical link between people and places.

Public spaces are an essential part of the urban landscape and play host to a range of publicly occurring activities which are of a temporary nature (Madanipour, 1996a; Moudon, 1991; Noschis *et al.*, 1978). Appropriation is a broad term, and the majority of the literature on the general theme of appropriation refers to it as a lasting and consistent condition (Ramirez-Lovering, 2008; Díaz & Ortiz, 2003; Ardura Urquiaga, 2014). Appropriation which occurs only temporarily, specifically including actions and events which take place within public spaces, and non-permanent, daily or extemporaneous instances of appropriation, has received less critical attention (Fonseca Rodriguez, 2015; Lara-Hernandez, Melis & Caputo, 2017).

In terms of how urban spaces are constructed, the unstoppable growth of cities worldwide is causing us to reflect on their development in terms of sustainability (Lehmann, 2015), and the ways in which urban spaces are used. Recasting the concept of appropriation with respect to urban growth and expansion, TA is a consequence of the necessity of adapting to a cityscape that through sudden and unexpected changes deprives its population of familiar reference points. The temporariness of appropriation becomes an essential element of urban flexibility, a citizen’s right as a social being living within an urban context.

Regarding the urban landscape, some authors (Roy & Alsayyad, 2004; Roy, 2009; Ramirez-Lovering, 2008; Lucia Bayer, 2016) have used TA to refer to the informal or illegal use of urban space. In the context of private land this may be appropriate, however, it is problematic to refer to the use of public space in both an illegal and informal manner, since by convention public space belongs to the citizens. Though this sense of public ownership may be stronger in certain regions or cultures, for instance in the Mediterranean, Latin American or Southeast Asia, although TA is more visible in these areas, this is not to say that it is a purely regional phenomenon. In fact, Fonseca Rodriguez (2015) provides a definition of TA as “the temporary act in

which people use public spaces to carry out individual or collective activities other than the purpose that the space was originally designed for,” a definition which is incredibly open to a wide range of activities and settings.

Thus TA allows citizens to reshape and redefine urban spaces for their own needs and uses, rather than simply accepting the constraints of the extant build environment. Citizens realise their right to fully exploit and manage their everyday life within the urban environment (Lefebvre, 1992; Purcell, 2002). Graumann (1976) notes that the appropriation of public space is a medium and a goal in order to overcome human alienation, whilst Lara-Hernandez and Melis (2018) argue that TA is the ephemeral and time framed appropriation of the urban environment reflecting an individual, social, and spatial need.

Lara-Hernandez, Melis and Caputo (2017) argue that TA can also be defined as the interaction between citizens and their city expressed through certain kinds of activities occurring in public spaces. Drawing upon the work of Crossa (2009), Drummond (2000), and Monnet (1995), it is possible to identify three groups of activities that can be considered as expressions of TA: activities related to the economy such as work/trade (Crossa, 2016, 2009; Loukaitou-Sideris & Ehrenfeucht, 2009; Kim, 2013; de la Torre, 2015) illustrated in Figure 3-2, activities related to leisure (Díaz Larrañaga, Grassi & Mainini, 2011; Drummond, 2000; Hernandez Mendo & Morales Sanchez, 2008; MacDonald & Shilrick, 2007; Mouffe, 2014; Seaman & McLaughlin, 2014; Simpson, 2011) shown in Figure 3-3 and activities related to religion, culture and heritage (Portal, 2009a; Monnet, 1995) presented in Figure 3-4. All three contribute towards maintaining the social urban landscape.



Figure 3-2: (left) Woman selling clothes in the street in Hong Kong; (right) Man selling handcraft souvenirs in Auckland's CBD (Source: Authors).



Figure 3-3: (left) Man exercising in Xian, China; (right) Band playing music in Newcastle, UK (Source: Authors).



Figure 3-4: (left) Altar in the street in Mexico City Centre; (right) Remembrance objects on a bench in Portsmouth, UK (Source: Authors).

Viewing TA in this light helps, in fact, to distinguish between the activities related to the appropriation of public space, and the simple use of the space. This position is aligned with what Seghezzeo (2009) calls *persons*, one of five dimensions of sustainability, and differs from the definition favoured by Leary-Owhin (2015), influenced by Lefebvre, that describes TA as a temporally bounded condition imposed upon differential spaces in the urban context. Not all the activities that a public space could host are a spatialised expression of TA. Lara-Hernandez, Melis and Caputo (2017) previously categorised them into three main groups which are economy, leisure and sacralisation (activities related to religious or cultural practices). Table 3 illustrates the three main groups.

Table 3-1: Activities in the public space related to TA (adapted from Lara H., Melis, & Caputo, 2017).

Category	Economy		Leisure		Sacralisation
Description	Any activity in which a person or group use the public space in order to obtain an economic benefit directly or indirectly.		Any activity in which a person or a group use the public space for leisure purposes.		Any activity in which a person or a group use the public space for religious purposes.
Sub-category	Work	Trade	Sports-games	Artistic expressions	Rest
Individual or collective	Advertising or promoting services, waiting,	Selling or buying products (food, handicraft, clothes, etc.)	Skateboarding, soccer, cards, marbles, hopscotch.	Playing music, dancing, painting, acrobatics, reciting and singing.	Eating, resting
					Processions, praying, lighting candles and putting flowers.

engaging or attracting possible clients.

Thus far we have explained TA as an urban phenomenon that emerges as an expression of local dynamics and relations within a local context, and as something deeply rooted in our human nature. The section that follows moves on to consider TA in relationship to informality in the urban arena.

TEMPORARY APPROPRIATION AND INFORMALITY

Previously was argued that TA is activated by a sense of identity and belonging whose nature is predominantly informal. Likewise informality can be seen as a temporary condition which places constraints and restrictions on existing public spaces, structures or norms. As argued at the start of this paper, the use of the term ‘informality’ by definition implies the assumption of a binary condition, where activities are assigned to either the informal or the formal, and as we have demonstrated in the section above, this is not always appropriate for activities which as part of TA occupy the grey areas in between.

Looking at the areas where informality and TA overlap, Bayat (1997) claims that informality is not a crucial predilection of the urban poor, rather it is an alternative choice to the restraints of more formal urban structures. In this respect, we argue that the use of public space is not a binary condition that could be conceptualise into formal or informal, the reality of the urban landscape is far more complex than that. Yet Bayat (1997) rightly criticises the focus on the notion of “civil society” because it tends to ignore the hybrid and un-constitutionalised social activities that dominate urban politics in developing countries. He defines these activities as the quiet encroachment of the ordinary which is “a silent, patient, protracted, and pervasive advancement of ordinary people on the propertied and powerful in order to survive hardships and better their lives”. The latter is not what Gramsci (1964) understood as passive revolutionaries, rather it relates back to the concept of an informality of need seen previously (Devlin, 2017). Disenfranchised groups carry out their activities driven by the need to survive, rather than as a conscious political act, and yet their use of public spaces is a not an encroachment since these spaces are by definition for public use. Marx and Kelling (2018) and Devlin (2017) criticise how scholars from the Global North have studied informality, and we appreciate the framing of informality in this context. However, the main claim of their argument is that urban theory embraces informality as a predominantly something for understanding “non-western”

cities, which frames informality very tightly. That for them TA is synonymous with informality is more difficult conceptually, since it equates any temporary use of public space with unregulated activity, which we know is not always the case.

A more significant term to conceptualise the relationship between the two concepts is hybridisation, a term provided by the anthropologist Garcia-Canclini (2005). He defines hybridization as “the socio-cultural processes in which discrete structures or practices, previously existing in separate form, are combined to generate new structures, objects, and practices” (2005, p. XXV). Garcia Canclini therefore distinguishes hybridisation from apparent synonyms such as fusion. *Mestizaje*³, syncretism and fusion are commonly used terms that differ from hybridisation, according to Garcia Canclini’s definition. An example of hybridisation (not hybridity) in everyday life could be represented by the actions of the rural migrants who practice economic and symbolic reconversion strategies by adapting their knowledge in order to work and consume in the city. Another example, could be the craftsmen who connect their traditional work with modern uses in order to get the attention of potential urban buyers, or employers who reformulate their culture on the job in the face of new technologies of production; indigenous movements that renovate their demands in transnational politics or in an ecological discourse and learn to communicate these demands via radio, television, and the Internet. Simmel (1969) believed that a marginal personality is a manifestation of cultural hybridisation – of living on a transitional stage between two cultures without being a full member of either. Both previous examples of activities occurring in public spaces are what Lara-Hernandez and Melis (2018) refer as TA in the urban landscape. These activities appearing in a more or less harmonious manner, each of them pursued for its own individual sake, is what produces culture (Eliot, 1949). Lara-Hernandez, Melis and Lehmann (2018) argue that TA is an emerging assemblage product of other assemblages such as the cultural, the legal and the environmental. Deleuze and Parnet (1977) define an assemblage as a “multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them, across ages, sexes and reigns –

³ The term is defined as: 1) Interbreeding and cultural intermixing of Spanish and American Indian people (originally in Mexico, and subsequently also in other parts of Latin America); miscegenation, racial and cultural intermixing. 2) The action or process of such racial and cultural intermixing. rare. 3) Latin American people of mixed American Spanish (especially Mexican) and American Indian parentage, considered collectively, rare (Oxford University Press, 2015).

different natures”. Following this argument, we could infer that TA as an emerging assemblage is similar to the process of hybridisation explained earlier.

Taking this idea of temporary association as an assemblage, we returned to the literature to investigate further how urban informality is constructed. We identified two main approaches in the studies focussed on urban informality: the technocratic and the organised bottom-up (see Table 1). This system of classification is very simple and allows us to highlight the main characteristics and flaws of each category. The first approach is more common and holds the view of informality following the rules of the legal, economic or planning system. Jacobs (1961) and De Certeau (1984) are the main critics of this approach by highlighting the importance of the social and of informal everyday life in cities. However, it is not clear what sort of city Everyday Urbanism endeavours to produce, only that it should be constructed in a bottom-up, citizen-driven manner (Devlin, 2017). The second approach encompasses tactical urbanism, DIY Urbanism and the group of studies on community gardens in cities in the USA, Canada and Europe. The Lefebvrian inspired scholars do not see freedom and self-determination as ends unto themselves, rather these concepts are conceived as fuel for a specific revolutionary political project—one that reclaims the means of producing the urban from an oppressive nexus of state and capital (Purcell, 2016).

A drawback regarding studies in cities in the Global North is that they lack a level of differentiation between formal and informal activities (Mukhija & Loutaku-Sideris, 2014; Chase et al., 2008). This lack of differentiation is because northern academics tend to theorise informality using a less holistic approach in comparison to researchers from the Global South, who approach informality as a mode of spatial production possessing a distinctive internal political and spatial logic (McFarlane, 2011; Roy & Alsayyad, 2004; Yiftachel & Hedgcock, 1993a). Southern scholarship has clearly pointed out that both the elite and urban poor practice informal practices. We agree with Devlin’s argument by stating that the study of informality in the Global North lacks of theoretical tools to conceptualise the phenomena in a more holistic way. None of the examples mentioned by Devlin occur in an ephemeral and spontaneous way, which would be typical hallmarks of TA, moreover they do not occur in areas that are thought of as public spaces.

Table 3-2: Categorisation of urban informality research approaches

Informality as:	Main advocates	Characteristics	Flaws
Technocratic approach	Crawford (2008) UN-Habitat (2009; 2013) ILO (1979) McFarlane and Waibel (2012)	It defines informality on the basis of the nature of property rights, planning, infrastructure and level of services. It emerges from the practices of categorisation by the state and/or planning derived by the neoliberalism. It is associated with legal pluralism which holds that plurality of legal systems co-exist, such as state law, religious law, indigenous law, customary laws and local conventions.	This approach provides less usefulness to analyse social processes usually context-specific that identifies the so called “urban informality”. It evidences the blind spot of planners and designers who were trying to tackle urban issues from a top-down approach by missing the everyday activities and the organic social landscape of the streets. It fails to analyse and describe the informal city because in the literature, both examples are usually conceptualise together while recreation and survival acts belong to a different human nature.
Organised bottom-up	Florida (2012) Blomley (2004) Davis, (1990) Low (2010) Low and Smith (2013) Mitchell (2006) Sorkin (1992) Lydon and Garcia (2014), (2011) Hou (2010)	It promotes new and creative ways in which urban users through informal tactics can spur and foster urban innovation by increasing the competitiveness of cities that contributes to economic development. Community gardens are part of a broader body of work that attributes political claims to certain kinds of informal use of abandoned or marginal spaces in the industrial city. Such informal uses vary from fulfilling basic needs like housing to a more leisurely activities like artistic activities and all of them share a Lefebvrian conceptualisation of the politics of spatial production.	The focus on process (theoretically rigorous though it may be), combined with a notion of desirable outcomes that is only roughly sketched, leaves the door open for practitioners to put these ideas to work in a way that lacks any sort of radical edge or concern for the well-being of disadvantaged communities.

The conceptualisation of TA enables us to understand the system of activities within the urban dynamics of a local context in a more holistic manner. “A system of activities occur within a specific system of settings, what does or does not happen in some settings influences what happen or does not happen in other” (Rapoport, 2005:p.23). The latter is closely linked to rules about what behaviour is permitted and what is forbidden in different settings. The rules are part of culture because they dictate who does what, where, when, and why, including or excluding whom. We agree with Rapoport (2005) when he emphasises that a system of settings is part of a larger system of settings (street, block, borough and so on).

DISCUSSION AND CONCLUSION

An initial objective of this paper was to illustrate the nuanced relationship between two complementary concepts, TA and the informal use of public spaces. The first section has

discussed the lack of consensus about the definition of informality and how it varies across languages. We have explained that there has to date been a narrow understanding of informality within the academic arena. The second section established the lack of consistency in regard to the term urban informality, and to its study. It follows that the approaches used to study informality in the Global North have a limited perspective. A possible explanation for this could be the way in which language forges thoughts and culture, and therefore how we understand and experience our environments (Anon, 1965; Ahearn, 2012). It has been argued that TA emerges from the local context as a product of the relations and dynamics in the urban environment, which are culturally driven. In addition, the manuscript has provided a categorisation of TA by providing examples from different cities and cultures.

A review of the study of approaches focused on informality in the Global North has been provided, categorising them in two main groups. What is surprising is that even though studies usually refer to informal activities occurring in public spaces as evidence of “informal behaviour” none of them provide substantial evidence. It can thus be suggested that TA is usually overlooked and misinterpreted as informal practices, while there could be activities, practices or/relations emerging in any local context. This also supports our earlier observations, which showed that a holistic approach is needed to study urban informality. The study of urban informality is cross-disciplinary, multidimensional and strongly correlated with other aspects of the city and society. Moreover, the complexity of the multidimensional concept allows for the development of case-specific and place-specific research, which suggests that each study focussed on urban informality should be specific for its particular context. Several authors (García Canclini, 1995; Bayat, 1997; Holston, 2009; Devlin, 2017; Canclini, 2018; Marx and Kelling, 2018) have suggested that the study of urban informality will benefit from multidisciplinary approaches such as the one presented here. However, further studies need to be carried out in this field of research. We agree with researchers such as Kates et al. (2001) and Clark & Dickson (2003) that there is a need to further push the importance of studies about human transformation as being essential to the scientific empirical agenda for the common interest.

Our findings have significant implications for the understanding of informal processes and activities in cities. This work contributes to existing knowledge on urban informality by providing the TA as a medium through which to study the urban landscape at the level of public spaces. Within the field of architecture (landscape, urban design and planning), more information on the design features of the built environment related to TA in any determinate context

would help us to establish a greater degree of accuracy in this matter. Some of the questions raised by this study are where does informality intrude, or prevent TA? and how does TA happen without informality being present? There is, therefore, a definite need for a deeper understanding of TA and its relationship with the urban informality of any socio-cultural landscape.

CHAPTER'S PREFACE

The previous chapter has suggested TA as activities, practices or/relations emerging in any local context, usually overlooked and misinterpreted as informal practices; highlighting the need of a holistic approach to study urban informality. It has been pointed out the concept as highly complex due to its multidimensional nature, allowing for the development of case-specific and place-specific research. Thus, Chapter 4 utilises assemblage theory in deep, illustrating TA as an emerging product of other assemblages such as culture, legal framework and urban design. It illustrates Mexico City (MCC) as an example of a highly coded city in which these assemblages emerge, taking the oldest street as a representative sample as a case-study to analyse TA. This chapter has been published as a paper with co-authors in the journal *Future Cities and Environment* (Lara-Hernandez, Melis & Lehmann, 2019). The contribution disclosure comes as follows:

CREdiT Roles	
Title:	Chapter 4 Temporary appropriation of public space as an emergence assemblage for the future urban landscape: The case of Mexico City
Author	Role
J. Antonio Lara-Hernandez	Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Visualisation, Writing-original draft, Writing - Review and editing
Alessandro Melis	Data curation, Formal analysis, Supervision, Writing - Review and editing
Steffen Lehmann	Writing - Review and editing

CHAPTER 4 TEMPORARY APPROPRIATION OF PUBLIC SPACE AS AN EMERGENCE ASSEMBLAGE FOR THE FUTURE URBAN LANDSCAPE: THE CASE OF MEXICO CITY

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Introduction

In total, 66 % of the urban population today live in slums or informal settlements. This proportion is expected to increase to 70 % by 2050, whilst the total urban population will include 80 % of the world population (United Nations, 2014). In such a scenario the informal use of public spaces in a compact city, argued to be a more sustainable urban model (Bay & Lehmann, 2017), will play a decisive role.

The literature indicates that temporary appropriation (TA) is a key concept related to the informal use of public space. It is claimed that TA of the urban landscape plays a decisive role in sustainability in its social dimension (Lara-Hernandez & Melis, 2018; Seghezzi, 2009; Ramirez Kuri, 2010; Marx & Kelling, 2018; Devlin, 2017). Consistent with this premise, its relevance will grow in conjunction with the dramatic growth of the informal part of the urban population.

The potential risk of a scarcity of urban open spaces within the compact city will favour the multidimensional use of the street (Ekawati, 2015), nevertheless very little is currently known about the true nature of TA of the streetscape and its contribution to the social sustainability of the urban landscape. Hence one of the two main aims of the present research is to explore the relationship between the urban design landscape and behavioural patterns, through the study of TA. Considering the novelty of the subject and its interdisciplinary nature, to address this research aim the paper uses an assemblage thinking approach which focuses on the relations between the assemblage's components rather than on the individual components themselves. In this specific case, it identifies three main components which are also assemblages (to be discussed further later). Firstly, TA of the streetscape as an emergence indicator of the informal use of the urban landscape; secondly, culture as a factor in social sustainability and lastly, the legal framework as a component (and an assemblage) regulating the fruition of public space.

The second aim of the present study is to describe TA as part of the urban landscape and as an emerging assemblage product of other assemblages or “social wholes”, such as cultural

and legal frameworks. Therefore the focus of the present paper is the relationships and interconnections between TA and assemblage theory in the field of urban sciences. TA is a re-emerging concept which occurs in the urban social landscape as a multidimensional phenomenon. Intended as multi-disciplinary and multi-scalar research, the present paper explores the way in which TA could be interpreted as (but not limited to) an emergence assemblage product of other assemblages such as the cultural, the legal and urban design landscape of what DeLanda (2016) describes as a highly coded city. In addition, a street in Mexico City Centre (MCC) was selected as a sample to illustrate this in detail. Lastly, the paper argues that TA could play an important role towards environmental sustainability by building towards energy reduction and public health by increasing outdoor activities. The following sections explain the assemblage thinking approach as a conceptual framework.

Assemblage thinking and territorialisation

The use of assemblage theory to explore, analyse or describe urban phenomena has become significant today thanks to its orientation towards considering different disciplines. The literature ranges from more theoretical pieces such as Anderson (2012), Muller (2016) and Dovey et al. (2018) to those more focused on its practical application such as McFarlane (2011), Dovey (2012) and Dovey and Pafka (2014). Deleuze and Parnet define an assemblage as a “multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them, across ages, sexes and reigns – different natures. Thus, the assemblage solely unit is that of a co-functioning: it is a symbiosis, a sympathy” (Deleuze & Parnet, 1977:p.52). Assemblage thinking is a practice that looks for relationships between elements rather than the elements themselves, aims to understand how combined synergism and flows work with each other. In addition, DeLanda (2016) adds a modification to the original concept by Deleuze and Guattari, in which the parts which match together to form an ensemble are themselves considered as assemblages, armed with parameters of their own. This means that, at all times, we are dealing with assemblages of assemblages. An assemblage approach seeks to connect categories or clusters of thought that are different. Unlike a “system” which implies hierarchy, assemblage thinking presumes an arrangement; it follows a pattern of entities interconnected without any apparent hierarchy. Marston et al. (2005) define it as a “flat ontology”. In other words, it is the opposite to the reduction of the particular to the general, of smaller to larger scales (Dovey, Rao & Pafka, 2018). In regard to the urban landscape, we agree with Dovey, Rao and Pafka (2018) when they claim that usually, scholars use research in the

urban environment with the aim of making a theoretical point, while the main duty of assemblage thinking is to use theory as the means to read, understand and improve the city (as in this paper).

Within urban research studies, the understanding of “territorialisation”, a key term in assemblage theory, is essential. The parameter that measures the extent to which the components of the assemblage have been homogenised and the degree to which its specifying boundaries have been depicted and made impenetrable is defined as territorialisation (DeLanda, 2016). On the one hand, the process of territorialisation refers to the process that defines or sharpens the spatial boundaries of actual territories. On the other hand it also indicates to non-spatial processes, increasing the homogeneity inside of an assemblage. Any process which either increases internal heterogeneity or destabilises spatial boundaries is considered “deterritorialisation”. In assemblage theory, territorialisation provides the first articulation of the components, the coding performed by genes, words or architectural elements take on the role as the second articulation. The latter consolidates the effects of the former and stabilises the identity of the assemblage. Larger entities emerge from the assembly of smaller ones. The main features of assemblage theory are twofold (Müller & Schurr, 2016). First, any assemblage is made up of parts which are self-sufficient and articulated by relations of exteriority, so a part may be detached and made a component of another assemblage. Secondly, an assemblage is characterised by two dimensions. First, the variable roles played by the parts (expressive or material) and secondly, the processes in which these components are convoluted, which either destabilise or stabilise the assemblage. DeLanda (2011) also added another dimension, an axis which defines processes that consolidate the identity of the assemblage or put it into a flexible state of operation. This added axis enables us to explain theoretically how assemblages are products of other assemblages.

Another important component of assemblages is “social wholes”. According to DeLanda (DeLanda, 2006, 2016), social wholes are interpersonal networks or instructional organisations; they cannot be reduced, neither can they be totalised. These are communities with an emergent property which is the degree to which the members are linked together. One way of examining this is by analysing the network between the members, which also applies to both persons and institutions. As McFarlane (2011) explains, there is the common conceit of assemblage with a expressive emphasis on how diverse elements join together and there is an understanding of assemblage as an approach, which is an orientation to an object operating as

a way of thinking about the economic, political or social as a relational processuality of composition and as a methodology adapted to practice, materiality, and emergence. In conclusion, we can think of assemblage as an orientation of the world and as an object in the world, since they are not mutually exclusive. Assemblages emerge from the synergy between their parts. Once an assemblage is in place it instantly starts to perform as a source of limitations and opportunities for its components, or what DeLanda (2016:p.21) calls “downward causality”. In this sense, we could argue that TA emerges as an assemblage from the physical environment, the cultural context and the legal framework/regulations that allow it to occupy a space within the urban landscape (see ‘The appropriation of the built-environment’). These occupied spaces are certainly a constraint for some of their human components, while at the same time they help to conform their cultural identity within the urban landscape bounded by desire. In assemblage thinking, desire is a form of force of attraction between the parts of an assemblage that is epitomised in the physical world. Thus, we could have multiple desires that intersect each other and even be contradictory. Dovey et al. (2018) give an example by claiming that “the suburb emerges from desires to have day-to-day access to the city without living in it”. Thus, we could argue that the desire to leave our trace in this world or simple spatial being produces TA of the urban landscape in any given context.

Anderson et al. (2012) claim that assemblage theory allows us to conceptualise differently the relationship between entities and their constituent elements. Assemblage acts as a technical term that enables amalgamated phenomena (i.e. TA) to be classified and categorised. It has been used in other research fields such as ecology, art and archaeology. Anderson et al. (2012) claim that assemblages comprise an “experimental condition” for a social-spatial theory concerned with the arrangement. The latter implies that analysis focused on composition, using the concept of assemblage, triggers an ethos of engagement with the world that is open, such as the form of the unity, the types of relationships involved and how the components will interact with each other. For instance, in terms of planning, the perimeter block in which the assemblage between planning and design, planning policy and inhabitants have shown to be far superior regarding social interactions among residents than suburban areas (Fleming, 1986; Raman, 2010). The relations between these three components are shown to be better environments in terms of mental health and wellbeing.

Jessop, Brenner and Jones (2008) argue that social-spatial relationality (assemblage) has four dimensions –territory, scale, place and network, hence allowing scholars to explore the

level of implication and peculiar articulation of each dimension in a specific “spatiotemporal context”. However, Anderson et al. (2012) criticise this view on two grounds. On the one hand, because it reduces the social-spatial relations to a set of already known, easily identified and conceded upon patterns, principles and forms; therefore, there are only a finite number of patterns principles and forms which contrast from these four dimensions. On the other hand, the processes of formation without prior claims about the form of relational configuration are allowed by assemblage. The theory of assemblage indicates potentially different points of view on the identity of a place that could help to analyse the identity of any urban landscape, and particularly the influence of the built-environment in the emergence of TA. However, we agree with Garcia (2013:p.45) when he states that “the processes that depict multiplicities, interactions of elements of assemblage, and the way the identity of an urban landscape operates in relation to changes in its built-environment are not explicitly defined in assemblage theory”. Thus assemblage theory could be enriched by other theoretical approaches in regard to social-urban research topics, such as the one presented here. In summary, it has been shown from this review that assemblage thinking is focused on the relations between components from which it emerges. An assemblage thinking approach means that even though one or more components of the assemblage could be changed or removed it does not necessarily affect the relations of the whole. Having defined what is meant by assemblage theory we will now move on to discuss TA.

The appropriation of the built-environment

There is no agreement about the meaning of the term appropriation and uncertainty remains within social-urban design research fields. For instance, authors such as Garcia Ramon, Ortiz and Prats (2004), Ramirez-Lovering (2008), Blanco, Bosoer and Apaolaza (2014), Araya Diaz (2016) and Marx and Kelling (2018) refer to the term to informal or illegal use of a place or territory. According to Lara-Hernandez and Melis (Lara-Hernandez & Melis, 2018), it is dubious to refer to TA as informal and illegal activity occurring in public spaces, since the use of public space is for citizens and their benefit. The appropriation of the built environment is an socio-spatial demand innate to the individual (Graumann, 1976; Yory, 2011). This argument is supported by Lefebvre (1971) with his triad about how urban space is produced, and by Yory (2011) who states that we as humans are inborn committed with the appropriation and construction of our surroundings. In addition, Yory (2011) incorporates the notion in his definition of topophilia that is “the act of co-appropriation generated between the man and the

world; through which the world becomes the world, at the opening realised by the man within its historic-spatial nature and human becomes human through its spatialisation” (2011:p.15).

Lara-Hernandez, Melis and Caputo (2017) define appropriation of the built environment as a continuous synergy between citizens and the urban landscape displayed through specific activities that contributes to the edifice of the social urban landscape. Appropriation of public spaces allows citizens to take part in the production of urban space, beyond the mere inhabitation/ fruition of the already formed urban space by giving citizens the right to completely manage and use their everyday life (Lefebvre, 1992). Relph (1976) defines place as the centre of action, a blending realm between human and natural spheres and as the heart of our prompt experiences of the world. Thus, the space endowed with meaning and values, determined by culture occupied by a person or a thing are places (Madanipour, 1996a). Graumann (1976) reinforces that argument by claiming that the appropriation of the public spaces contributes to overcome human alienation. The latter implies that the fleeting and time-framed appropriation might be assumed as temporary appropriation (TA), in which the design of the built environment is crucial but not sufficient (Graumann, 1976). Martínez (2014) support this argument by claiming that TA is dependent upon both the design of the built environment and the cultural connotations of its social realm. For instance Lehmann (2009) wrote about strategies for informal urban interventions and the influence of site-specific artistic concepts in the creation and appropriation of informal public space. He notes that ‘vacant city lots and buildings are often used as starting points for cultural innovations. Over the course of the transformation of the post-industrial city, public space has become an exciting laboratory for interdisciplinary cooperation between artists, architects, urban planners, and landscape architects. Consequently, TA is a spatial, and social need that must be taken into consideration in regards research within the urban field.

Temporary appropriation and public space

Environmental psychologists such as Korosec-Serfaty (1976), Pol Urrutia (2002) and Vidal Moranta and Pol Urrutia (2005) described the term appropriation as a temporary phenomenon that implies a dynamic process of interaction between the individual and its surroundings. In the same vein, Graumann (1976) in his seminal paper *The Concept of Appropriation (Aneignung)* states that the term refers to a process similar to that of humanisation, which is the fundamental societal defined meanings interiorised by the individual. Purcell (2002), Yory (2003),

Hernandez-Bonilla and Gomez-Gomez (2015), Portal (2009b) and Haan (2005) refer to this process as people's temporary activities in urban public spaces that help to construct urbanity, social cohesion, sense of belonging and identity for a specific place. Throughout this paper, the term temporary appropriation (TA) will refer to the "temporary act in which people use public spaces to carry out individual or collective activities other than the purpose for which space was originally designed for" (Fonseca Rodriguez, 2015:p.3). This concept helps us to differentiate between activities in which individuals appropriate space from those activities that are simply the use of space (Lara-Hernandez & Melis, 2018). Figure 4-1 and Figure 4-2 illustrate how activities related to the economy, which are extended from the place of working into the public realm (street), are an example of TA (Crossa, 2009, 2016; Loukaitou-Sideris & Ehrenfeucht, 2009; Kim, 2013; de la Torre, 2015; Lara-Hernandez, Melis & Caputo, 2017; Monnet, 1995; Moudon, 1991; Vázquez & Tapia Quevedo, 2011). Figure 4-3 and Figure 4-4 illustrate people carrying out leisure activities, which are certainly a type of activity related to TA (Drummond, 2000; MacDonald & Shildrick, 2007; Hernandez Mendo & Morales Sanchez, 2008; Díaz Larrañaga, Grassi & Mainini, 2011; Simpson, 2011; Mouffe, 2014; Seaman & McLaughlin, 2014; Lara-Hernandez, Melis & Caputo, 2017; Lehmann, 2009; Groth & Corijn, 2005; Mouffe, 2012). Moreover, TA is also manifested through religious activities (Figure 4-5). At first glance, these activities might be seen to be associated with underdevelopment or even informality, but in terms of social-urban dynamics they are more than that. The following paragraphs will explain this in more detail.



Figure 4-1: (left) Man selling chestnuts in the street in the centre of Palermo; (right) Man selling handcrafted jewellery in the centre of Mexico City (Source: Authors).



Figure 4-2: (left) Woman selling soup in Ho Chi Minh City, Vietnam; (right) Man and boy selling water, Ho Chi Minh City, Vietnam (photos: Antonino DiRaimo)

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Figure 4-3: Kids skateboarding on a street corner in Chichester, UK.



Figure 4-4: (left) Men playing cards in the street in the historic districts of Palermo; (right) Man watering his “garden” the street in the centre of Mexico City (Source: Authors).

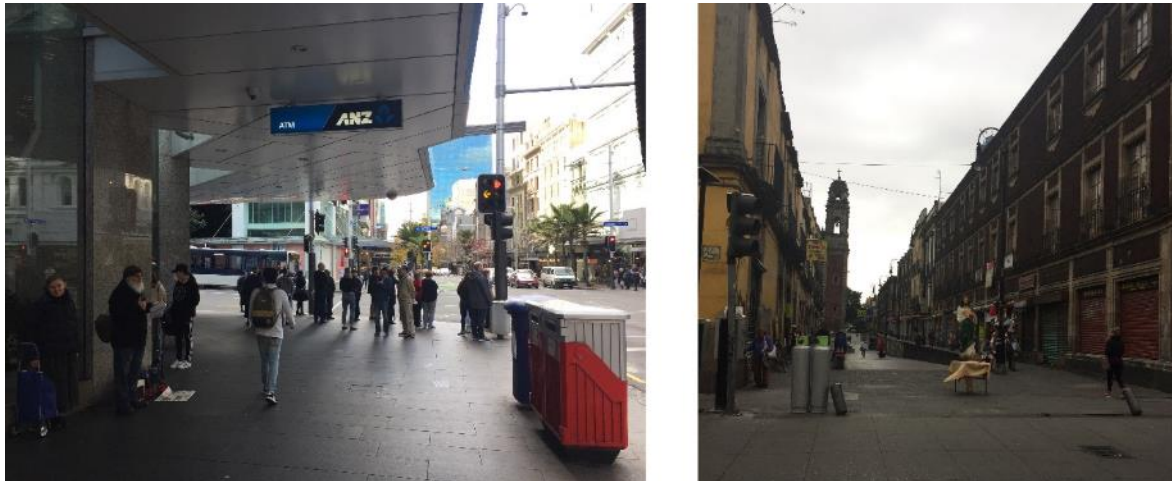


Figure 4-5: (left) Couple preaching in the street in Auckland CBD; Altar in the street of the centre of Mexico City (right) (Source: Authors).

TA is a multi-dimensional and dynamic socio-spatial phenomenon related to the cultural landscape of the city. First, it is multi-dimensional because it does not occur simply in a space, rather it occurs in what Relph (1976) described as place, which a combination of natural and human dimensions and our punctual experiences of the environment, it is the centre of action. It is a space endowed with meanings, symbols and significance; it is socially constructed over a given period of time (Madanipour, 1996a). Also, it hints at the imaginary, symbols and rituals that people's values have towards specific places (Rapoport, 2005). Secondly, it is dynamic due to its conditioned temporality embodied in Yory's theoretical interpretation of topophilia. As he quotes, "the act of co-appropriation generated between the man and the world; through which the world becomes the world, at the opening realised by the man within its historic-spatial nature and human becomes human through its spatialisation" (Yory, 2011:p.45). Lastly, it is socio-spatial because TA involves, in any given context, the interaction between the individual as part of any given social whole and its environment in any given historical context.

As noted by Lara-Hernandez, Melis and Caputo (2017) TA is an interaction between the individuals (or collectively) and their city through specific activities happening in the urban landscape. Moreover, this interaction embodies the cultural landscape in which people perform an important role in its configuration (Hubbard et al., 2002; Seghezzeo, 2009). Following this argument Graumann (1976, 1983), Pol Urrútia (2002), Vidal Moranta (2005) and recently, Martinez (2014) state that only public spaces in where people feel identified are temporarily appropriated.

Lara-Hernandez, Melis and Caputo (2017) identify and categorise the activities relevant to TA into three main groups, the first related to the economy, the second to leisure and the third to sacralisation (Table 4-1).

Table 4-1: Categories of TA in the public space (Source: Lara H., Melis, & Caputo, 2017).

Categories	Economy		Leisure		Sacralisation	
Description	Any activity in which a person or group uses the public space in order to obtain an economic benefit directly or indirectly.		Any activity in which a person or a group uses the public space for leisure purposes.		Any activity in which a person or a group uses the public space for religious purposes.	
Sub-category	Work	Trade	Sports-games	Artistic expressions	Rest	
Individual or collective	Advertising or promoting services, waiting, engaging or attracting potential clients.	Selling or buying products (food, hand-craft, clothes, etc.)	Skateboarding, soccer, cards, marbles, hop-scotch.	Playing music, dancing, painting, acrobatics, reciting and singing.	Eating, resting	Processions, praying, lighting candles and putting flowers.

Different authors have measured the appropriation of public spaces in the urban environment in a variety of ways. Whyte (Whyte, 1980), in his seminal work, analysed people’s activities in public and semi-public squares in New York through the use of video cameras. Along the same lines but in the Latin-American context, Salazar-Trujillo (2010) and his team analysed the permanence, use and occupancy of squares and streets in Bogota. However, there are certain drawbacks associated with the use of video cameras in public spaces. First, when users notice them they tend to behave differently from usual (Salazar Trujillo, 2010) and secondly, they require more time, labour and technological resources.

Highly coded city

Considering the cultural implications previously highlighted, the selection of the city is pivotal to better understand how TA could be explained as an assemblage of assemblages within the built-environment. According to DeLanda (2016) some cities could, be catalogued as a highly “coded city”, meaning that they have a unique regional culture and a well-defined identity. Global cities have a multiplexity of geographies (Fyfe & Kenny, 2005) which means that there is high dynamism between the cultural, social and physical landscapes (Lima, 2001). The overlapping dynamism between city landscapes (or assemblages), such as social, legal and cultural aspects, define a specific place (Hubbard et al., 2002). Brenner (2005) supports this argument by claiming that there is a “vertical” differentiation in which social relations are embedded within the hierarchical scaffolding of nested territorial units stretching from the

global, the supra-national, and the national downwards to the region, the metropolitan, the urban, the local, and the body. Thus, we have selected MCC as an example of a highly coded city, which is convenient for illustrating one of the arguments presented in this paper.

The centre of Mexico City is an emblematic palimpsest dense with cultural recall. It was built on the top of Tenochtitlan (Figure 4-6, left), the capital city of the Aztec empire, whose urban pattern was compounded by blocks, streets and channels. The Aztecs used the channels for communication purposes, while the streets were reserved for a diversity of activities such as trade, leisure, religious celebrations or even sacrifices (Leon Portilla, 1995). According to Kent (1990), the Aztecs were a civilisation with high layers of social complexity reflected in the design and use of their cities. The public spaces in which the social, political, economic and religious lives of people occurred were the streets (Webster & Sanders, 2001). Informal activities were an essential element of street life, especially for the common population in society, confirming that the intensive multi-utilisation of the outdoor spaces for diverse everyday activities was a characteristic of the pre-Hispanic civilisations (Keller, 2006; Suárez Pareyón, 2004). In the sixteenth century, during the Spanish colonisation, a new order was established over Tenochtitlan, completely transforming the city in terms of its economic, social, cultural and legal dimensions (Stanislowski, 1947). Hence, the elements of the city or the assemblage were changed through a process of syncretism between the Spanish and Aztec cultures. Regarding TA, the conquerors tried to regulate informal activities (trading, playing, religious expressions) that happened on each specific street for each activity with a singular order (Nelson, 1963), by confining them to specific places, like squares in the Spanish tradition. They succeeded for a short period of time, but as the city grew, the confinement of informal activities was not viable anymore. As Monnet (1995; 1996) describes, this informality is still palpable in the streets of MCC. Currently, it is estimated that in Mexico City more than 1.2 million people are working in the informal economy (Gomez Flores, 2013). Culture structures behaviour and the use or non-use of the street. The streets of MCC are public spaces that are key to urban life and have been even prior to the Spanish colonisation.

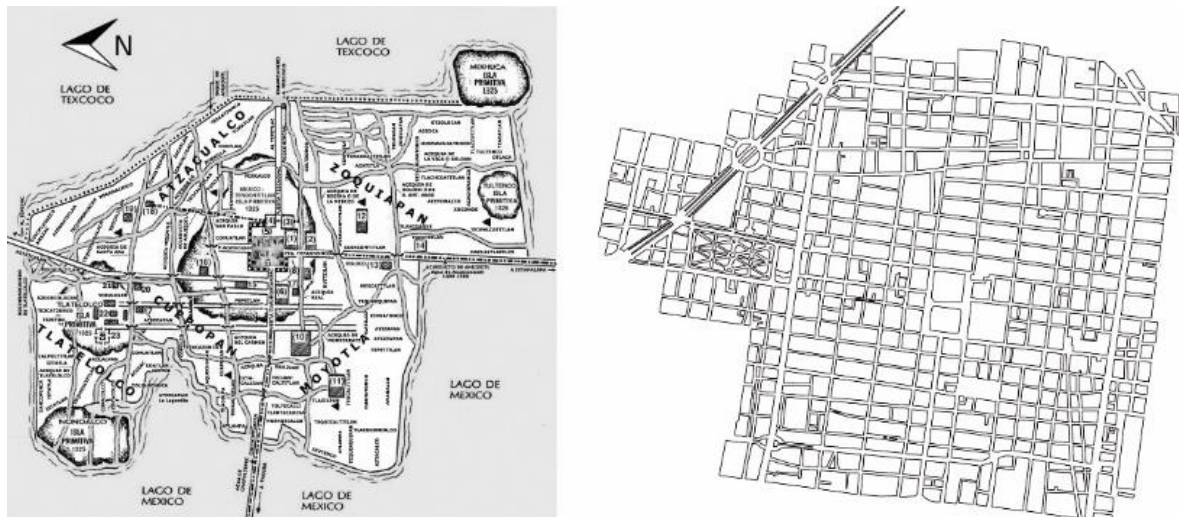


Figure 4-6: (left) Tenochtitlan. Schematic representation 1325-15 (Carrera Stampa, 2002); (right) Mexico City Centre (Autoridad del Centro Historico, 2011).

Mexico City Centre is the biggest and the oldest colonial historic centre in America with 9.1 km² and founded in 1521. The urban planning pattern used in Mexico was applied to the majority of the Spanish colonies in America (Stanislawski, 1947). In 1987 MCC was declared by UNESCO (2017b) as a world heritage place. After the nomination, the government in association with private institutions have transformed and “improved” the built environment in MCC through urban design interventions. The built environment is one of the elements that contributes to the improvement of the quality of urban life (UNESCO, 2013). These interventions have as a main purpose to improve the quality of the built environment and therefore to increase the quality of urban life such as community sense, inclusion, pluralistic function and public space democracy. Between 2007 and 2014 there has been an economic investment of approx. 6 million Mx pesos (approx. £230 million) which represents roughly 82,579 m² of public spaces and 10.3 L/km of streets “improved” (Gobierno de la Ciudad de Mexico, 2016). These urban design improvements have been concealed and agreed between government, academics and residents (Autoridad del Centro Historico, 2011). On the one hand the Autoridad del Centro Historico⁴ (2011) argues that there have been positive results such the improvement of the physical quality of the built environment, economic growth within the area, and the wealth of the population living in the area. On the other scholars such as Nivon-Bolan and Sanchez-

⁴ This is an institution that supports the activities of the Head of Government, where the powers of the Public Administration Units of the Government of Mexico City (CDMX) are concentrated by each delegation. It acts under the criteria of unity, autonomy, functionality, efficiency, coordination and impartiality for the planning and ordering of the territorial, economic and social development of the Historic Centre.

Bonilla (2014), Flores-Arias (2015) and Ramirez-Kuri (2015) argue that such urban improvements in public spaces are leading to spatial exclusion and segregation. Thus, there are contradictory outcomes.

This section has attempted to provide a brief summary of the literature illustrating MCC as a highly coded city. We will now move on to explain two assemblages present in the urban landscape highly relevant to the emergence of TA as an assemblage.

Cultural assemblage

TA is therefore triggered by the sense of cultural identification with a certain urban context. Tylor (1871) defines culture as a “complex whole which includes knowledge, beliefs, arts, morals, law, customs, and any other capabilities and habits acquired by [a human] as a member of society”. In other words everything man-made could be described as part of culture. As a consequence of culture being a vast domain, this paper takes into account only the built-environment as a cultural subset that is relevant to TA.

According to Guattari and Rolnik (2005), the word culture has been used in three different ways throughout history, and these are still current. The first and oldest refers to how we “cultivate the spirit” which denotes value and categorises people between the ones that have culture and others who do not. The second, the culture-spirit is related to civilisation, i.e. black culture, underground culture, technical culture. The third usage, culture-merchandise, refers to the capital (people, money and institutions) that produces and reproduces cultural merchandise (music, movies, art, architecture). Bonfil Batalla (2004) defines culture from a wider perspective, meaning the group of values, symbols, skills, attitudes, meanings, social structure, communication methods and physical objects that allow a determinate society a way of living. In addition, the latter allows the transformation and reproduction of culture through future generations. Moudon (1991) argues that the built-environment is a high-pitched display of cultural specificity by alleging that a distinct behaviour emerges from each type of society and, in terms of activities, is a reflection of it. For instance, in the Netherlands, public space is the space of strangers, since the borderline between the public and the private dimension of people’s lives are very rigid (Haan, 2005), while in Mexico these boundaries can be blurred or overlap because public space is continually temporarily appropriated (Monnet, 1995).

Rapoport (1998) claims that activities arising in the public space (TA included) can be disassembled into four elements: the activity per se, how the activity is realised, how it is

associated with other activities and combined into activity systems, and the meaning of the activity in which the role of the design of the space is key. Kyle, Jun, and Absher (2014) imply that the urban identity and bonding between individuals and place is constructed through activities constantly repeated over certain periods of time. Elliot (1949) supports this argument by stating that culture is produced by these activities, appearing in a more or less harmonious manner, each one of them pursued due to its own individual sake. DeLanda (2016) agrees with the latter by claiming that the habitual repetition of an action could be assumed to produce similar results in the future.

DeLanda (2006) argues that some social actions may not involve semantic interpretation at all. In these cases, the weight of tradition is such that social activities associated may lie nearly to the edge of what can appropriately be called consciously oriented action, and indeed often on the other side. Moreover, “the practical routines could be somehow impregnated by ritualism symbolism, but at the same time being capable of leading to successful casual interactions with material entities” (DeLanda, 2016, p. 83). In this regard, TA is an assemblage similar to language because it can be viewed as an assemblage, as a component of a communal or organisational assemblage and as a parameter of those assemblages. Meaning that it rests not so much in entities themselves as in the relationships between their entities (Hawkes, 1977). Hence we can assume that culture is an assemblage in a dynamic continuum in which the repetition of activities over time reap culture, but the same actions also reflect distinct cultures. In summary, the elements of cultural assemblage have changed; however, TA as an assemblage has prevailed because the relations between the assemblages have remained too.

Having defined TA and its dynamic reciprocal condition with culture, we will now move on to explain the legal framework as an assemblage of the urban landscape.

Legal Framework assemblage

This section attempts to describe how the capacity of laws and regulations could act to affect the emergence of TA in MCC. The legal framework of the use of public spaces generates events that create social obligations, as incorporeal transformations that take place. According to Deleuze and Guattari (Deleuze & Guattari, 1989), when the language determines the capacity of a body, usually dictated by an authority, it is either individually or institutionally legitimised by the regulations or codes. They create an important component that interplay with assemblage’s material components such as human bodies and buildings (DeLanda, 2016). For

instance, the transformation of TA into an informal and illegal activity is a pure instantaneous act or incorporeal attribute that is expressed by the aforementioned regulations.

Overall, the government of Mexico considers public space as an ambience or scenery for social integration, where there is a right of association and the right of others to use the same space, its appropriation (accessibility, permanence and enjoyment) of the space, the collective space, the space for everybody (Gobierno del Distrito Federal, 2013). However, TA is usually associated with informality and therefore, it constantly faces attempts to regulate it or forbid it, for instance, the Programa de Rescate (rescue program) of MCC in which one of the strategies was the removal of street vendors from perimeter A (Autoridad del Centro Historico, 2011). However, Crossa (2009) argues that in spite of the strategies implemented by MCC to remove informal commerce from the streets, street vendors have found ways to resist, and they have become *toreros* (this term refers to Mexico City's nomadic vendors), and are still working in the area.

Several laws and regulations (Gobierno del Distrito Federal, 2013; Asamblea Legislativa del Distrito Federal III Legislatura, 2004; Gobierno del Distrito Federal, 2016, 2015; Gobierno de la Ciudad de México, 2014) in Mexico City refer to the use of streets and the activities that are allowed to happen in them. All of them are components of the assemblages that, as has been explained earlier, stabilise or destabilise the assemblage through the process of territorialisation. For instance, in 2004, the *Ley de la Cultura Cívica del Distrito Federal* (Law of the Civic Culture of Mexico City) was approved by the government, and it essentially establishes how citizens should behave in public spaces and neighbourhoods. *Distrito Federal* (Federal District) was politically dependent upon the governor of the Estate of Mexico; however, after 2016 it is now part of Mexico City (Patiño, 2016). The 15th article of Chapter I/Second Title states that it will guarantee the harmony and coexistence of its inhabitants through the fulfilment of their duties, such as a) the freedom of people's actions in public spaces, and b) by allowing the proper use of public spaces according to their nature. Then in 2013, a more specific law was approved: *Ley para el uso de las vías y los espacios públicos del Distrito Federal* (Gobierno del Distrito Federal, 2013) (Law for the use of streets and public spaces in Mexico City), which principally establishes the right to use and enjoy public spaces, especially streets that are used in different ways, rather than just for motor-vehicles. On the one hand, Article 6 states that public space users (including users of the streets) have the right to use the property of common use, according to its nature, the right to access, stay in and transit the streets. On the other hand,

Article 7 establishes that public space users have a duty to access, use, stay in or transit public space without disturbing other users. Thus, both laws make reference to and recognise the social dimension of the streets as public spaces in which TA emerges. Other laws, such as *Reglamento de Transito del Distrito Federal* (Transit Regulations of Federal District) and *Ley de Movilidad de la Ciudad de Mexico* (Law of Mobility of Mexico City) establish free access to streets and roads and the use of and transit of pedestrians, cyclists and motor-vehicles in the streets and roads.

The previous section has shown that the components of the assemblage (legal framework) in MCC have changed since colonisation and even in current times, but TA as an assemblage has remained. In summary, it has been shown from this review that the role played by TA of public spaces is relevant to the city's urban dynamics with potentially positive benefits contributing to the social landscape. The resilience of an urban environment is strongly linked to the processes of the social landscape of the city. (Childers et al., 2014). Moreover, Lara-Hernandez and Melis (2018) suggest TA as an indicator of urban social sustainability to study and assess the urban landscape at the scale of the public space.

Methodology

A case-study approach was adopted to conduct this exploratory study. The legal framework assemblage was analysed through the consultation of secondary sources; the paper examines the laws and regulations approved by the government of Mexico City towards the use of the street. It is a method called document analysis which is one of the most common systematic procedure for reviewing and evaluating documents (digital and printed) (Bowen, 2009). TA and urban design analysis were carried out on site, selecting Moneda Street located in MCC as a sample (blue line in Figure 4-7) for the following reasons: first it is one of the oldest streets in the area, second, it has mixed land-use and building functions (Flores, 2016) and lastly it has been improved by urban design interventions mentioned earlier. In total, 32 photographs were taken along Moneda St; the starting point was in the corner with Seminario St. next to the Zocalo (main square) and the end point was in EJE 6 av. Visual complexity (VC) analysis in conjunction with a TA observation method is one of the more practical ways to study the urban assemblage (Rapoport, 2005; Lara-Hernandez, Melis & Lehmann, 2018; Lara-Hernandez, Melis & Caputo, 2017; Gutierrez de Velasco Romo & Padilla Lozano, 2012; Salazar Trujillo, 2010). The diversity of TAs is calculated using the Shannon-Weiner diversity index, which the formula comes as follows: $H' = -\sum p_i \ln p_i$ in which $p_i = 1/S$ (S =total number of elements). Thus, the

higher the value of diversity index, the higher level of TAs. After calculating the diversity value of each street, the results can be compared and show which of the analysed streets have the higher diversity value of TA.



Figure 4-7: Moneda St. In Mexico City Centre (Autoridad del Centro Historico, 2011)

Legal framework analysis

Table 4-2 summarises the official public information found in Mexican laws and regulations. The discovery of the absence of clarity surrounding the potential activities on the street, and how citizens appropriate such public spaces, accentuates the need for further clarification of the term and the consensus between different laws and regulations.

Table 4-2: Laws and Regulations about the use of Streets in Mexico City

Name	Law for the use of streets and public spaces in Mexico City (Gobierno del Distrito Federal, 2013)	Law of the Civic Culture of Mexico City (Asamblea Legislativa del Distrito Federal III Legislatura, 2004)	Law of Mobility of Mexico City (Gobierno del Distrito Federal, 2016)	Transit Regulations of Federal District (Gobierno del Distrito Federal, 2015)	Citizen Manual for the care of City Centre (Gobierno de la Ciudad de México, 2014)
Generalities & Functions	Stabilised the right to use and enjoy the public space, including streets used in a different way rather than for motor-vehicles.	It establishes the minimum rules of citizen behaviour.	It dictates the laws for mobility purposes in Mexico City.	It regulates the use of streets and roads of Mexico City.	It is a manual for citizens that use MCC.
Specific articles that mention the use of public space	<p>Art 6. The users of public space and streets have the right to I. Use the property of common use, according to its nature and destiny; II. To access public spaces and streets; III. To stay in public spaces and streets; IV. To transit in public spaces and streets.</p> <p>Art 7. The duties of the users are: I. To use the public space and streets according to their nature and destination; II. To exercise their rights without disturbing the order and public peace, or affecting the developing continuity of other inhabitants' activities.</p>	<p>Second Title of the Civic Culture and neighbour's participation. Chapter I. Art 15. The Civic Culture in Mexico City, which guarantees the harmonious coexistence of its inhabitants, is based on the fulfilment of the following citizen duties. VI. To allow the freedom of action of people in public spaces and streets. X. Make proper use of public goods, spaces and services according to their nature and destination.</p>	<p>Art 5. Mobility is the right of every person and the community to carry out the effective movement of individuals and goods to access through the different modes of transportation recognized in the Law, a mobility system that conforms to the hierarchy and principles that are established in this order, to meet their needs and full development. In any case, the object of the mobility will be the person.</p> <p>Art 13. For the fulfilment of the present Law and the ordinances that emanate from it, Public Security will have the following attributions:</p> <p>III. Maintain within the scope of its powers, that the road is free of obstacles and elements that impede, hinder or impede vehicle and pedestrian traffic, except in only authorized cases, in which case, as far as possible, they should not obstruct the accesses for persons with disabilities.</p>	<p>Art. 1. The purpose of these regulations is to regulate the circulation of pedestrians and vehicles on public roads and road safety in Mexico City. Art. 6.- The Public Administration will provide the necessary means for people to freely choose the way to move in order to access the goods, services and opportunities offered by the City. The level of vulnerability of users, the externalities generated by each mode of transport and their contribution to productivity will be considered for the establishment of public policy in this area. Priority will be given to the use of road space and the distribution of budgetary resources will be assessed according to the following hierarchy of mobility:</p> <p>I. Pedestrians</p>	<p>Chapter 7. Use and conservation of public spaces. Conditions to realise cultural activities. First, permission must be granted by the SSPDF (Secretary of Public Safety of Mexico City), the SGDF (Mexico City Council) and Autoridad del Centro Historico.</p>

In summary, it has been shown in this review that the government of Mexico City (2013) establishes three main points: first, that the use of public spaces (streets and squares) must be accessible for every citizen without any distinction or impediment; secondly, it is recognised that streets could have other functions rather than just for transportation purposes and lastly,

Mexican citizens have the right and the duty to appropriate public spaces and streets. In addition, the laws establish that the streets should be free of obstacles or elements that impede or hinder pedestrian traffic, except in authorised cases. The three laws give priority to pedestrian movement, but nevertheless, they acknowledge different uses for the street, rather than just transportation. However, the aforementioned laws and regulations do not specify which other functions or activities could take place on the streets. Therefore, we argue that they remain vague and even contradictory, which could have an impact on citizens' social obligations and the way in public spaces are used.

Temporary appropriation analysis

The TAs that shape the urban realm in the local context were researched. In order to analyse TA this study uses a technique known as “activity mapping” that has been developed to analyse the ground floor in relation to street uses and physical elements (Francis, 1984). This technique is used to understand the “temporal city” that takes place in the urban space. The theoretical aspect of this technique stresses the process of interactions between people and the physical environment. The period of observation was from 7 to 27 May 2018. The observations took place during weekdays and at the weekend, as well as at three different times during the day, each for a period of two hours. The activities will be mapped as an expression of temporary appropriation. The outcome shows the exact location of TA occurring in the public space. The observation was carried out as shown in Table 4-3.

Table 4-3: Observation analysis

Days of observation	Time of observation	Observation technique	Diversity analysis
Monday and Sunday	<p>1. 7:00 - 9:00 am. The first period of observation is selected according to “rush hour” in MCC. Offices, shops and schools usually start their operation at this time of the day..</p> <p>2. From 2.00 – 4.00 pm: The second period will be lunch time. Many people use this time to take a break, to go out, and have lunch, therefore the chances of observing a diversity of activities in public spaces are higher.</p> <p>3. From 6.00 – 8.00 pm: The third period is when the majority of people finish their daily working routines.</p>	Three-Round observations of two-hour periods were carried out each day. Each two hour period consisted of 2 rounds of 15 minutes walking (to and fro, totalling 30 minutes in each hour); i.e., 4 rounds per 2-hour slot. These rounds of observations were conducted in 6 snap-shots in two 15 minutes walking snap-shots, per hour, per area in a day of observation.	Shannon-Weiner diversity index $H' = -\sum p_i \ln p_i$

Visual complexity analysis

The analysis used here is adapted from an Australian research-based team (Porta & Renne, 2005) and begins by analysing the VC of the streetscape which measures the amount of variety

in the streetscape. It seeks to describe the degree to which the street is a rich visual tapestry. One advantage of VC analysis is that it allows one to study the streetscape tri-dimensionally. Figure 4-8 illustrates a series of photographs taken along the centre of the street, 25m apart. A total of 32 photos were taken along Moneda St. and a naming code was used to identify them starting with the first letter of the Street name followed by the section number. The pictures were categorised into five main groups according to the VC value. In order to ensure that each photo captured the same amount of visual field, a camera was attached to a tripod (eye level). Once the photos were gathered, each of them was analysed to convene the measurements of the sub-indicators such as colour, façade, urban furniture and pavement. The photos were compiled, and a computer program (Photoshop) was used to analyse them precisely. The main disadvantage of the method proposed by Porta and Renne (2005) is that it could be considered subjective since the measurements are based on personal judgments. In an attempt to make it more objective, the measurements were assessed using a software program for the colour indicator while, for the others, a group of five experts (all architects) appraised and categorised the photos separately. The origin and cultural backgrounds of the experts range from Africa, Asia, Europe, America and Oceania. The selection of this five architects could be considered in terms of Groat and Wang (2013) as a stratified sampling strategy.

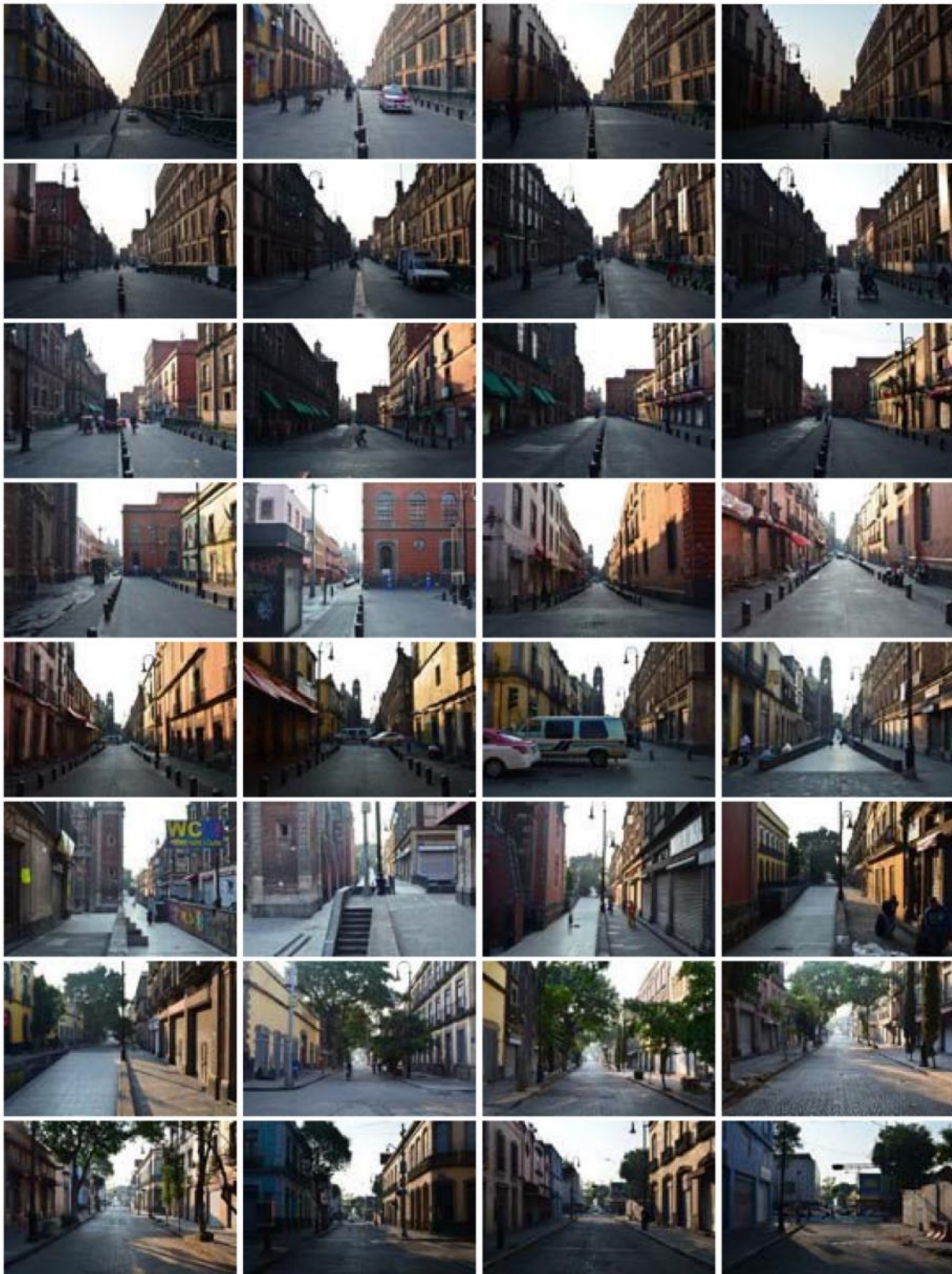


Figure 4-8: Moneda St. photos, From M1 top-left to M32 bottom-right.

The streetscape was analysed by comparing the VC of each photograph (or street section). The concept of 'visual complexity' is essentially multi-dimensional, thus is best evaluated by reference to four different sub-areas: colour, façade, street furniture and pavement.

1. Colour (the number of different colours, brightness, richness and high contrast) by comparing the standard deviation index of the colour histogram of each photo. Colour histograms are frequently used to compare images (Arman, Hsu & Chiu, 1993; Hampapur, Jain & Weymouth, 1995; Ogle & Stonebraker, 1995; Pass, Zabih & Miller, 1998). The photos were classified into five groups, the highest ranking five (86-80 Std Dev), followed by four (79-73), three (72-66), two (65-59) and the lower one (58-52). Figure 4-9 illustrates the highest and lowest ranked photos respectively.
2. Façade (attractive doors and cornices, attractive height building articulation and details in roof lines, balconies, verandas, and material's variety). This sub-indicator has been calculated based on the personal judgment of five architects from different countries: Mexico, New Zealand, Algeria, Italy and the UK. Each photograph was evaluated three times with reference to a 1–5 scale shown in Figure 4-10.
3. Street furniture (benches, street-art, alluring light posts, raised planters, etc.). Similar to the previous sub-indicator, it was also judged based on personal judgement from five different architects with reference to a 1–5 scale illustrated in Figure 4-11.
4. Street pavement (variety of texture, colour, different material, patterns, and attractive finishing). Similarly to the previous sub-indicator, it was also judged based on personal judgement from five different architects with reference to a 1–5 scale illustrated in Figure 4-12.

The output was then illustrated in a radar graph in order to better understand the relations between the components of the urban design assemblage. The latter is a key difference between the method developed by Porta & Renne (2005) in which the VC is calculated as the average of the sub-indicators.



Figure 4-9: Colour sub-indicator from highest (left, rating 5) to lowest (right, rating 1).



Figure 4-10: Façade sub-indicator from highest (left, rating 5) to lowest (right, rating 1).



Figure 4-11: Street furniture sub-indicator from highest (left, rating 5) to lowest (right, rating 1).

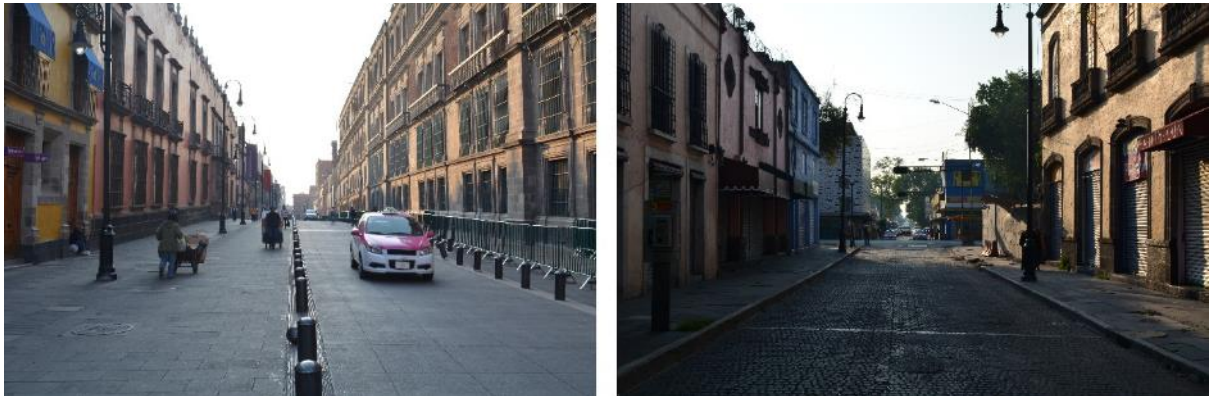


Figure 4-12: Street pavement sub-indicator from highest (left, rating 5) to lowest (right, rating 1).

Findings and Discussion

The first set of questions aimed to describe the cultural and legal landscape, as has been outlined previously. Table 4-4 summarises the results. It indicates the Shannon-Weiner diversity index (SW Div.) value and the VC value for each of the street sections. M8 and M32 show the highest and lowest values of VC respectively.

Table 4-4: Street sections, TA diversity and VC values

Street section	SW Div	Visual complexity	Street section	SW Div	Visual complexity
M1	1.78	4.25	M17	4.63	3.50
M2	1.02	4.00	M18	3.04	3.75
M3	0.62	4.25	M19	3.25	2.75
M4	0.36	4.25	M20	2.54	3.00
M5	2.41	4.25	M21	2.70	2.50
M6	2.45	4.25	M22	2.74	1.25
M7	2.28	4.25	M23	0.77	2.25
M8	1.77	4.50	M24	0.52	2.50
M9	1.68	3.75	M25	1.31	1.75
M10	3.01	4.25	M26	2.85	2.00
M11	2.25	3.50	M27	0.35	3.00
M12	1.69	3.50	M28	0.42	2.75
M13	2.47	3.00	M29	0.41	2.50
M14	3.97	2.25	M30	0.42	2.75
M15	3.96	3.50	M31	0.22	2.50
M16	2.90	2.50	M32	0.74	1.50



Figure 4-13: Linear chart of the street sections and their corresponding TA and VC values.

Figure 4-14 exemplifies street section M8 which obtained the highest VC value and TA value of 1.77 SW div. Figure 4-15 illustrates street section M32 which obtained the lowest VC value and TA value of 0.74 SW div. Figure 4-16 and Figure 4-17 illustrate street sections M17 and M31 with the highest (4.63 SW div) and the lowest (0.25 SW div) TA diversity values respectively.

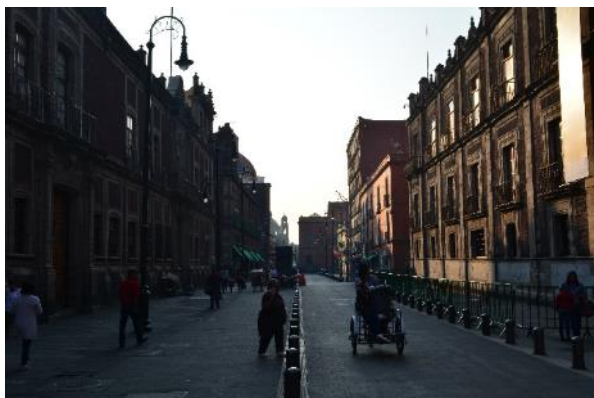


Figure 4-14: (right) Street section M8 with the highest VC value, (left) VC chart.



Figure 4-15: (right) Street section M32 with the lowest VC value, (left) VC chart.

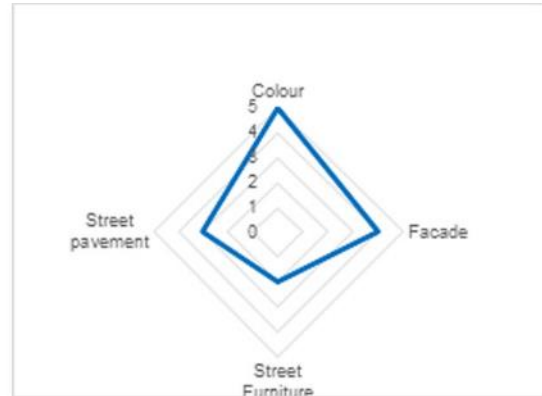


Figure 4-16: (right) Street section M17 with the highest diversity level of TA of 4.63 SW Div, (left) VC chart.



Figure 4-17: (right) Street section M31 with the lowest diversity level of TA of 0.22, (left) VC chart.

What stands out from the figures is that higher levels of VC as shown in Figure 4-14 are not necessarily correlated with higher TA diversity levels values, which are just barely above half of the TA SW div. maximum value observed in Moneda St. The most interesting aspect of these graphs is that they illustrate a correlation between the sub-indicators as an assemblage and TA. For instance, Figure 4-17 shows proportionally reduced VC values in comparison with the values shown in Figure 4-16 but TA SW div. values are at extremes of the sample (4.63 and 0.22 respectively). This result is somewhat counterintuitive. Taken together, these results suggest that there is a strong relationship between the urban design assemblage (VC) and the diversity of TA in the built-environment. Figure 4-13 illustrates that the highest TA SW Div values were found in street sections from M13 to M22 ranging from 2.64 to 4.63. The most striking result to emerge from the data is that the VC statistical average of those street sections (2.80) is below the statistical average for the whole street sections (3.14). If we now turn to the whole TA street performance, these results suggest that higher levels of TA SW Div are found in the central area of the total street sections.

An initial objective of the paper was to demonstrate how TA in the urban landscape could be analysed using an assemblage thinking approach by illustrating how the interrelations

between cultural and regulatory assemblages demonstrate TA emergence. The current paper has illustrated the concept of a highly coded city as a pivotal context in which TA emerges affected to some extent by the relations between the cultural and legal assemblages. The paper found that TA could be explained as an assemblage product of the relations with other assemblages such as the cultural and the legal. These relationships may partly be explained by the fact that despite the cultural syncretism (the mix between Aztec and Spanish) and the legal and regulatory changes across the centuries which have occurred in MCC, TA is still palpable and evident. The most interesting finding is that the TA of public spaces is mentioned and recognised to some extent by all of the Mexican laws and regulations reviewed so far. Surprisingly, TA is stated as a citizen's right, but also a duty. This finding is contrary to previous results offered by previous authors such as Garcia Espinosa (2005), Hernandez Bonilla and Gomez Gomez (2015) and Martinez-Ramirez (2015) who have suggested that regulations have been imposed on public spaces that hinder TA. A possible explanation could be the way in which public space is managed by public or private authorities, which usually segregate or exclude people belonging to minority groups or a lower economic class. Another possible explanation could be attributed to the physical appearance of the built-environment after urban renewals, which could be related to cultural symbols that exclude certain populations or groups within this specific context. A limitation of the paper is that it only focuses on the laws and regulations for the use of streets (and public spaces) in Mexico City; it does not address how the streets are actually managed as public spaces.

Prior studies have suggested the importance of VC as an urban design indicator and its relation to social sustainability. The findings presented here are contrary to previous studies (Mahdzar, 2008; Francis, 1984; Palaiologou, 2015) which have suggested that higher values of VC indicators are associated with higher levels of social activity (including TA) in the built-environment. These findings raise intriguing questions regarding the nature and extent of the beautification of the urban landscape towards pursuing liveability. The present results are significant in at least two major respects. Firstly, they illustrate that there is a proportional relationship between the values of the VC indicators and TA. Lastly, the higher values of TA SW Div are in the central areas of the street as a whole, meaning that the closer to the square or the avenue the less TA diversity. A possible explanation for this might be because the proximity to a more versatile public space (square) allows more diverse activities to occur, reducing the TA SW Div in the vicinity, while in the case of the avenue it seems that the proximity to heavy car traffic flow discourages TA. A note of caution is due here since there are other urban elements

that were not taken into consideration for the study that could affect the TA SW Div such as metro stations. These results provide further support for the hypothesis that first, the higher the level of traffic, the less interaction between people on the street (including TA) (Appleyard, 1980), and secondly, the less availability of open space, the more the street becomes the *space of contact* (Choay, 2001a).

These arguments further support the idea of using an assemblage thinking approach to analyse and describe urban phenomena. In addition, the paper sets out the aim of illustrating the relevance of TA in environmental sustainability and public health. To encourage TA could positively contribute to the urban landscape. Firstly, it promotes the use of outdoor spaces which contribute to the reduction of building energy consumption; secondly, because it is an outdoor activity, it promotes physical and mental health. It can thus be suggested that TA has a positive impact on the urban environment and population. This is an important issue for future research.

Conclusion

The first section of the paper described the assemblage thinking approach in which assemblages emerge between the interactions of their parts. This paper has shown that TA is an assemblage that emerges as a product of other assemblages. We agree with DeLanda (2016) by arguing that assemblage theory is extremely resilient because it can be implemented at larger spatial scales and longer temporal scales too (as in the analysis presented here). In conclusion, the present research reinforces the idea that assemblage theory can be used as a theoretical framework for investigating urban-social phenomena. The findings of this research provide insights for the understanding of how the flows and the relationship between components within the urban landscape make emergence assemblages such as TA. This research also contributes to the existing knowledge of TA by offering an assemblage thinking approach as an instrument for studying the urbanity at the scale of the public space. Research in the fields of the built-environment (architecture, landscape architecture, urban planning and urban design), could provide further knowledge on the design settings (design features) of the built-environment (another assemblage) related to TA in any determinate context. In addition, the contribution to other fields of research (sociology, environmental psychology, urban ecology) could help us to shed light and increase certainty in this matter.

Looking at the scope for further interdisciplinary work on TA, one possibly valuable research approach might explore the potentially positive contribution of TA on urban energy consumption. In 2015 the building sector consumed roughly 84.6 EJ globally, accounting for 29% of global final energy consumption (24% for residential and 8% for commercial) (IEA, 2017b) and generated 30% of energy-related CO₂ emissions (IEA, 2015). One EJ is fairly close to the electrical power consumption of the world in a given 11-hour period in 2015. The energy-spending on heating and cooling in total building energy consumption ranges between 18% and 73% – the highest being in developing countries located in tropical and subtropical climates by commercial buildings (Ürge-vorsatz et al., 2015). The IEA (2017a) makes a series of recommendations in order to counter this trend such as strengthening and enforcing building energy policies across all countries to prevent the lock-in of long-lived, inefficient building investments, the implementation of educational programs, training and capacity building, and better building of energy data. Another potential extension of our work would be to look at the implications of TA for promoting more activities outdoors rather than indoors which, would have significant benefits for public health. Physical inactivity is a major risk factor associated with non-communicable diseases such as type 2 diabetes (Jeon et al., 2007), breast and colon cancer (Friedenreich, 2010) and coronary heart disease (Sattelmair et al., 2011). Physical inactivity was estimated to be responsible for 5.3 million premature deaths worldwide in 2008 (Lee et al., 2012, 2013). TA of the streetscape by definition occurs outdoors and is opposed to what advocates of health sciences categorise as physical inactivity. Thus, we suggest TA could have a positive impact on public health since it promotes outdoor activities. However, more studies and evidence are required on this matter.

A limitation of this study is that with regard to the urban dimension, it was centred at the streetscape level. A natural progression of this work would be to analyse and study other streets with similar urban conditions, or to focus on TA on different urban scales such as neighbourhoods, districts and cities, and look at the implications of TA for the built environment. Despite its exploratory nature, this study offers some insight into the beneficial aspects of TA for the urban agenda. The findings of this study have a number of practical implications. For instance, it could inform practitioners, professionals and decision makers dealing with urban design interventions aiming to create more inclusive and lively public spaces in central areas of the city and more specifically in UNESCO world heritage city centres. In addition, it could

contribute to the development and improvement of guidelines provided by local and international institutions aiming to a better practice. Lastly, it provides a methodology that allows a quick assessment of the street as public space in terms of inclusion.

CHAPTER'S PREFACE

The previous chapter has illustrated how TA emerges in the urban landscape as a product of other assemblages such as culture, legal framework and especially urban design. However, there are many elements that could play a crucial role towards TA emergence. the design of the built environment. Thus Chapter 5 analyses and identifies urban design elements of the spatial configuration of the street that are related to the TA, focusing on softness (permeability) which has been suggested as the main design feature of the street affecting activities and uses. The softness of the streetscape refers to the possibility to engage visually from a building's interior to the street. To do so, it utilises a comparative analysis, taking MCC as a case study because of the reasons already discussed in previous chapter. This paper has been published with co-authors in *Advances in Science, Technology & Innovation, Springer Book Series* (Lara-Hernandez, Melis & Caputo, 2020). The chapter (paper) contribution disclosure comes as follows:

CREdiT Roles	
Title:	Chapter 5 Understanding spatial configuration and temporary appropriation of the street in Latin American cities: the case of Mexico City Centre
Author	Role
J. Antonio Lara-Hernandez	Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Visualisation, Writing-original draft, Writing - Review and editing
Alessandro Melis	Formal analysis, Resources, Supervision, Validation, Writing - Review and editing
Silvio Caputo	Resources, Writing - Review and editing

CHAPTER 5 UNDERSTANDING SPATIAL CONFIGURATION AND TEMPORARY APPROPRIATION OF THE STREET IN LATIN AMERICAN CITIES: THE CASE OF MEXICO CITY CENTRE

Lara-Hernandez, J. A., Melis, A., & Caputo, S. (2017). Understanding Spatial Configuration and Temporary Appropriation of the Street in Latin American cities: the case of Mexico City Centre. *Advances in Science, Technology & Innovation*, 153–173 (Springer).

Introduction

Mumford (1938) claims that, among the physical spaces where the inborn human need to interact occurs (town, village, and the city), the city, above all, else represents the theatre of social action. The creation of environments that support social interaction in places is, therefore, a fundamental aim of urban design (Mehta, 2013). Mumford's aforementioned definition suggests the existence of a dialogue between people and physical space or environment, which is spatialised through people's activities occurring in the space. This dialogue has been defined differently over time through expressions such as "street ballet" by Jacobs (1961), "social landscape" by Hillier and Hanson (1986), "social interaction" by Mahdzar (2008) or the "space of contact" by Choay (2001a), all of which capture the idea of a space where a variety of different social encounters happen, e.g. people playing, walking, sitting on a table drinking a coffee, etc. According to Anderson (1986c), the expectation of daily human contact that public space offers is unique. When public spaces do not allow this contact, one of the possible risks is the rise of alienation, which contributes to social stress, space neglecting and an increase in crime rates (Gehmann, 2009). Moreover, since motor vehicles have taken over most of the street space, the only place where the street ballet occurs is on the sidewalks. For instance, almost 88% of daily commuters in the USA use private vehicles (Downs, 2004). Another example, could be Mexico City, where the number of vehicles has increased from 3.7 in 2005 to 9.5 million in 2015, i.e. 159% within a decade.

Over time, the street has proved to be a spatial typology able to accomplish the role of public space. This accomplishment is reflected on the meaning of public space which is given by society and generated through urban design, planning and management; but more importantly, it is produced through the use and appropriation by the users (Mehta, 2013).

The street, as a spatial element of the city, is versatile and susceptible to transformations because, even when its use is constrained, the street can still host a high degree of activities and a variety of uses, it can be re-shaped and its boundaries redefined. For instance, streets that host activities such as temporary markets, parades, political events or even social protest. Despite

that the street is often perceived as an element for transportation purposes or as mere urban border (Lynch, 1960), other scholars, such as Jacobs (1961), Appleyard (1981), Jacobs (1993) and Gehl (2011), have highlighted the relevance of the street as space for urban life. People depend on the street for functional, social and leisure activities.

In 1987, UNESCO declared Mexico City Centre (MCC) as a world heritage site because of both its urban and cultural landscape. The declaration has triggered the beautification of the built environment through urban design transformations in order to improve the quality of urban life (Crossa, 2016). However, scholars (Ramírez Kuri, 2015; Oehmichen, 2010; Díaz Parra, 2014) have pointed out that, since the temporary appropriation (TA) of streets is an essential characteristic of public spaces in the Mexican context, urban transformations have triggered a deterioration of public space.

The Mexico City government has supported inclusivity and universal design via prescriptions in regard to the use of public spaces (squares and streets), and how accessible they are for citizens who do not have any impediments or distinctions (Gobierno del Distrito Federal, 2013). However, Delgadillo (2014) argues that regulations over the use of public space have been imposed to areas that had been already renovated. The application of the regulations follows three patterns: first, as a juridical framework that allows the government to displace users (informal use, suspicious behaviour or misbehaving). Second, as a cultural agenda that systematically occupies the public space by free cultural and amusement events (also promoted by the government) that erode the social dimension of public space. A public space that is already occupied by events as a top-down approach diminishes the plural realm of the place. Lastly, a zero-tolerance agenda, which includes the increment of police officers and surveillance in the area.

The paper will explore the relationship between elements of the streetscape design and TA in the context of renovated urban areas in MCC, in order to acquire understanding and acknowledging of the importance of the appropriation of public spaces as a need to improve the wellbeing and lives of citizens in the Latin-American context.

In fact, the pre-Hispanic civilisation shows a cultural specificity in the use the public space still evident today. As occurred in several Latin-American cities, including Mexico City Centre, the change of this starting condition, which is an integral part of the cultural heritage, risks compromising the quality of life, in addition to the characteristics of its identity. The methodologies used to address the aims of the present research vary according to the different

cultural aspects, taking into account and including the measurement of the softness of the streetscape and the diversity of TA.

The relevance of appropriation in the urban context, a theoretical approach

Here, the terminology 'temporary appropriation' refers to the act where individuals use a public space to conduct collective or individual activities, aside from the purpose for which the space was originally designed (Fonseca Rodriguez, 2015). This section describes, from different theoretical approaches, the concept of appropriation of the street as public space. It also illustrates the relevance of this theoretical concept to understand the relationship between people and public spaces. Even though there is not a consolidated theory on appropriation, other theories incorporate and approach the concept, claiming that it plays a key role in the bond between people and places and, therefore, in the social construction of the public space.

In 1976, the term 'appropriation' was used by the scientific community in the area of environmental psychology. Korosec-Serfaty (1976) defined appropriation as a temporary occurrence, meaning that it is an interactive, dynamic process between the environment and individuals. Graumann (1976) stated that the appropriation of the built environment is a socio-spatial demand innate to the individual. Advocates of appropriation claim that the individual constructs himself through his own actions in the space immersed in a socio-cultural historic context. Pol (2002) proposed a dual model to conceptualise the term appropriation, describing the relationship between people and space: these relationships are action-transformation and symbolic-identification. The action-transformation is the action of people or groups in which they transform the space by leaving their trace as an expression of their identity. The implementation of religious objects or altars in public spaces could be a good example. The symbolic identification is related to affective, cognitive and interactive processes of people or groups, in which they identify themselves with the environment. Appropriation is a crucial concept in which philosophical reflections have been left (Lefebvre, 1971:p.164). Humans interact with environmental appropriation (Yory, 2011:p.13) as a connatural condition. Regarding the urban context, the appropriation of public spaces in every society is pivotal: without appropriation, there is no social development within society (Madanipour, 1996b).

Lefebvre (1971) argued the actions of human groups in spaces have two modalities: the domination and the appropriation of the environment. The author emphasises that, without appropriation, the domination of environment does not make sense. Thus, it implies that, in an

urban context, there is no urban realm if public spaces are not appropriated. Moreover, without appropriation, while the economic and technological development of society is possible, the social development remains null (Lefebvre, 1971). Following the ideas of Lefebvre (1992), Purcell (2002) argues that the appropriation of public space is embedded within the second aspect of the right to the city, which includes the right of inhabitants to physically access, occupy and use urban space. Moreover, “not only is appropriation the right to occupy already-produced urban space; it is also the right to produce urban space so that it meets the needs of inhabitants” (Purcell, 2002). Therefore, in a broad sense, appropriation is established by the interaction between citizens and their city (public space), and between the social realm and the physical realm (Contreras, 2008). Both realms are constantly interacting as different layers of the urban landscape in the city; the product of this interaction is the expression of urban life.

Yory (2011) incorporates the notion in his definition of topophilia, which is “the act of co-appropriation generated between the man and the world; through which the world becomes the world, at the opening realised by the man within its historic-spatial nature and human becomes human through its spatialisation” (2011:p.15). The author develops topophilia as a philosophical concept, claiming that it is an inborn necessity of humans. This inborn necessity is what triggers the creation of the bond between people and places. The term topophilia was introduced by Tuan (1974) from a different perspective, which has emotional characteristics reduced to an emotive and affective relationship between man and place. Yory (2011) pushes forward the concept, and brings the term to the spatial and geographic realm, which concerns urban design as we have in earlier definitions. The lack of topophilia erodes the bond between people and places. Moreover, the absence of appropriation is characterised by the denotation of the lack of congruence between the physical landscapes and place meanings, held within broader physical, cultural and emotional contexts (Ujang, 2012). Therefore, TA is a key concept for theoretically establishing the link between people and places.

Scholars such as Jacobs (1961), Whyte (1980), Jacobs (1993), Low (1999), Loutaku-Sideris (2014), and Araya-Diaz (2016) and practitioners such as Gehl (2010), Lydon et al. (2014), and Project of Public Spaces (2017) have discussed and analysed the physical attributes of built environment for the purpose of creating lively and inclusive public spaces for the sake of appropriation. In the Latin-American context, scholars such as Garcia-Espinosa (2005), Carrion (2013), Hidalgo et al. (2014) and Hernandez-Bonilla (2015) have analysed the effect of transformation of the built environment and the use of public spaces in city centres. However,

few of them consider it from the perspective of the street and their TA, and even less explore the urban design elements that could be implicated.

Issues in the inclusiveness and temporary appropriation in public spaces: the case of Mexico City

Currently, a broad discussion concerning the use and function of public spaces in Latin American cities, and their role in supporting a vibrant and inclusive urban life, involves several scholars (Carrión 2007; Ramirez Kuri 2008; Sequera 2014). Among them, Gutierrez de Velasco Romo and Padilla Lozano (2012) have analysed the TA of public spaces in central areas, focusing especially in the Mexican context. They found that public spaces located in central areas of the city are used by a wide range of people, and they appropriate such spaces through different activities (eating, selling, waiting for other people, shoe-bowling, singing, performing, reading, etc.). They also suggest that the urban design of public spaces should contemplate those different forms of appropriation in order to achieve more inclusive spaces. If the different forms of TA of public spaces are not considered by urban design to practise social inequity, urban segregation and social exclusion in a determinate area could increase (Vidal Moranta & Pol Urrútia, 2005), as in the case of city centres in Latin America, such as Buenos Aires and Mexico City (Capron & Monnet, 2013). In *Xalapa* (the capital city of the state of Veracruz, located in the Gulf of Mexico), the spatial configuration (*land use, complexity*) of streets located in central areas was changed through urban design interventions, users now claiming that they have been deprived of the possibility of appropriating them (Hernández Bonilla & Gómez Gómez, 2015).

Heritage protection in public space in Mexico City Centre

As mentioned above, within the context of Latin American cities, MCC provides a good example of the urban design transformation processes of public spaces in world heritage centres.

In 1987, MCC was declared a world heritage site by UNESCO, thanks to its uniqueness, authenticity and integrity of the built environment and culture. In order to preserve the place (built environment and culture) for future generations, the main objective of the declaration is to preserve the quality of the existing physical and social realm (UNESCO, 2013). This declaration led to a commitment between the Mexico City government and UNESCO (2015), aimed at the conservation of the built environment and the protection of the local culture. Regarding the built environment, the objective is addressed through continuous maintenance

of façade, and through urban design transformation of the public spaces. Culture refers instead to the particular uses, expressions and meanings of the people. Those particular uses, expressions and meanings demonstrate the local culture through the people’s daily actions taking place in public spaces, which are acts of spatial appropriation (Certeau, 1984; Casakin & Bernardo, 2012). The simplicity of people’s daily actions is part of the local identity (Belanger et al., 2012).

Streets as public space in the history of Mexico City

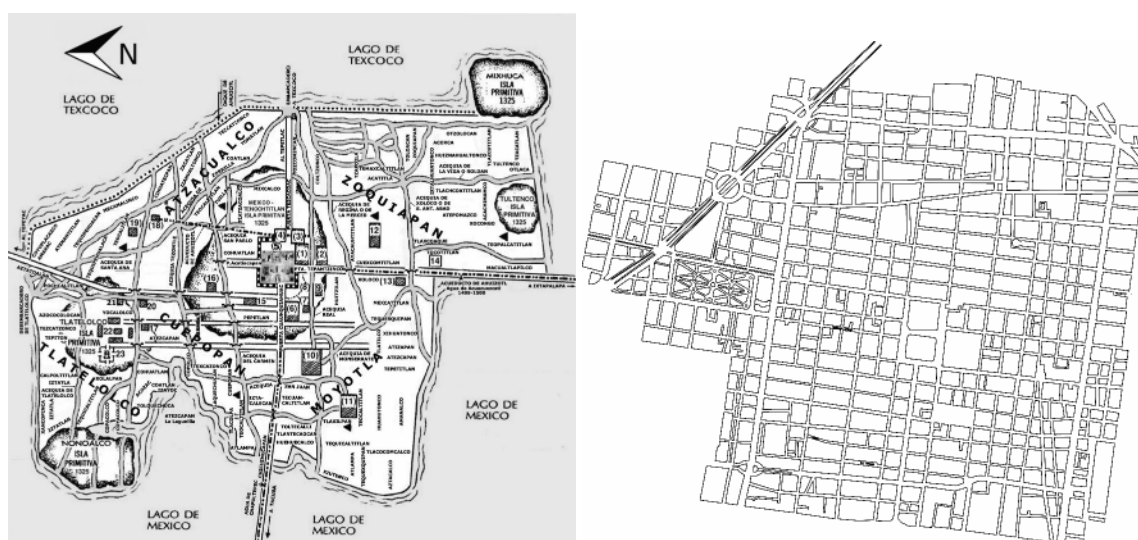


Figure 5-1: Tenochtitlan. Schematic representation 1325-1519 (left) (Carrera Stampa, 2002), Mexico City Centre (right) (Autoridad del Centro Historico, 2011)

Mexican city streets are public spaces which were vital for urban life, even before colonisation by the Spanish. Pre-Hispanic civilisations were characteristic of the use of outdoor spaces for daily activities (Keller, 2006; Suárez Pareyón, 2004). Regarding urban patterns, Tenochtitlan (Figure 5-1, left) was created by streets, blocks, and channels. The Aztecs communicated by using these channels, whilst streets were used for a diverse range of activities, for instance leisure, trade, religious celebration, or potentially sacrifices (Leon Portillam 1995). The streets were a public area where the religious, economic, political, and social lives of people were manifest (Webster & Sanders, 2001). Informal activities are an important component of street life, particularly in common society (Cossa 2009). Figure 5-2 shows the quotidian life in Tenochtitlan.



Figure 5-2: The great Tenochtitlan by Diego Rivera in Palacio Nacional in Mexico City (Rivera, 1945)

During the 16th century, whilst Spanish colonisation was occurring, a new planning pattern (Figure 5-1, right) was founded in Tenochtitlan, which transformed the city (Stanislawski, 1947). The conquerors attempted regulation of the informal activities (religious expressions, playing, trading, etc.) occurring on particular streets for each of the activities with a singular order (Nelson, 1963), by restricting them to particular places, e.g. traditional Spanish squares. They were successful for a brief period, however as the city grew, confining informal activities was no longer a viable option. Monnet explains (Monnet, 1995, 1996) that these TA types remain tangible in the Mexico City streets.

Inclusiveness and temporary appropriation of the streets in the Mexico City Centre

Returning briefly to the current management condition over the use of public spaces in MCC, scholars such as Saravi (2008), Ramirez-Kuri (Anon, 2016; 2008) and Alesandri-Carlos (2014), claim that this new set of rules threatens the inclusive and pluralistic nature of the public space. This situation puts at risk the TA of public spaces, which, according to Purcell (2002), is one of the key elements to exercise the people's right to the city as citizens.

Within the Mexican context, MCC has been physically preserved (buildings' façades), transformed (public spaces), and invested in the most (Delgadillo, 2014). According to the report of *Autoridad del Centro Histórico* (2014), between 2007 and 2014, an approximate 82,579 m², and 10.3 lineal km of public space (streets) have been upgraded with an economic investment (public-private) of more than \$5,340,200,000.00 pesos (3,654.46 USD per sqm)

while in Oaxaca in 2015 were invested \$16,000,000.00 pesos in an approx area of 5200 m² (168.42 USD per sqm) (Redacción ADN, 2015). The urban design intervention, carried out in association with private institutions, includes: change of pavement, pedestrianisation, sidewalk expansion and the addition of urban furniture, lighting, and trees which are transforming the spatial configuration. Figure 5-3 (left) shows the condition of *16 de Septiembre* Street in 2009 before any urban design transformation. After the urban design transformation took place in 2013, pavement was substituted with new and more attractive patterns, street lighting was improved, trees were planted, and urban furniture and elements for the disabled were added. Figure 5-3 (right) shows the current situation of *16 de Septiembre St.*, in which the spatial configuration of the built environment was transformed. Streets such as *Madero*, *Regina*, *5 de Mayo*, *Del Niño Dios*, *Talavera*, *Leandro Valle*, *Mariana Rodríguez del Toro de Lazarín*, *Dolores*, and *Independencia* have undergone similar urban design interventions. According to *Autoridad de Centro Histórico* (2016), which is an autonomous and decentralised institution that manages urban design interventions in the MCC, other streets, such as *Seminario*, *República de Guatemala*, *Tacuba*, *Avenida Hidalgo y Puente de Alvarado*, *San Jerónimo*, *Vizcaínas*, *Aldaco*, *Jiménez*, *Callejón Esperanza* and *Meave*, are planned to be transformed in the near future. Figure 5-4 illustrates the transformed areas, areas under process of transformation, and areas for future transformation in MCC.

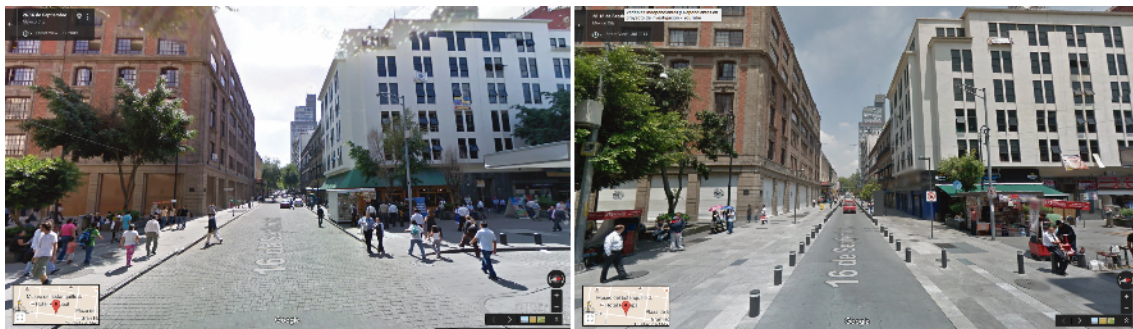


Figure 5-3: 16 de Septiembre St. taken on July 2009 (left) and July 2014 (right) (Source: Google Maps, 2014)

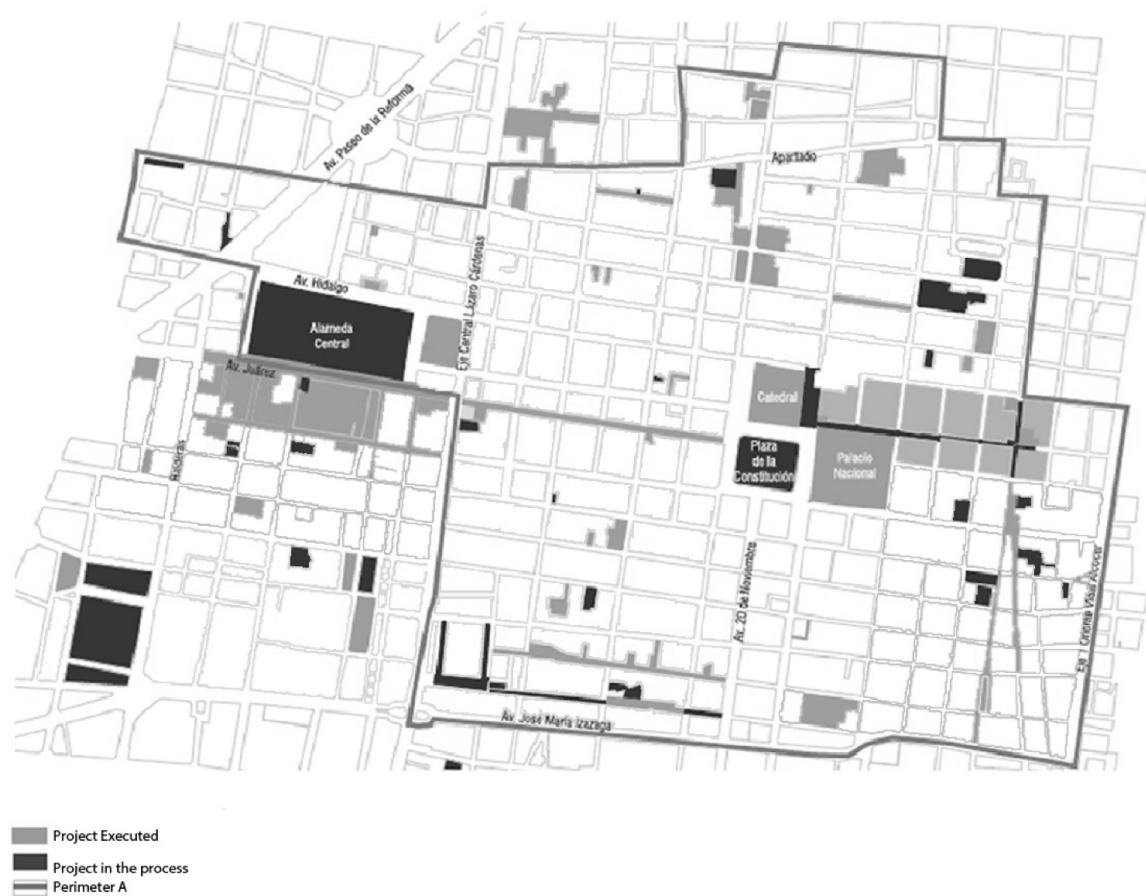


Figure 5-4: Executed projects and projects in process in the MCC. Data from 2015 (Gobierno de la Ciudad de Mexico, 2016)

Temporary appropriation and elements of the spatial configuration of street

Moudon (1991) stated that the built environment's spatial configuration is a culturally specific display. It is claimed that each of the societal types causes specific behaviours and that this is reflected in how people make use of the street. Which urban design elements of the spatial configuration of the street may affect TA? Based on literature reviewed, the following paragraphs describe urban design elements of the street (land use diversity, softness, visual-complexity, sedibility) that are strongly related to the TA of public spaces. The following table summarises the literature.

Table 5-1: Elements of the spatial configuration of street related to TA.

Element	Description	Relevant author
Land use	The main activity taking place in a building facing the street at ground floor level.	Jacobs [3], Gehl (Gehl, 2011), Bentley [39], Mahdzar [40].
Softness	It is split in two: 1) Transparency corresponds to the possibility of engaging visually from a building's interior to the street (glass windows or doors). 2) Transitional space is the space visually accessible from the public realm such as stoops, porticos, entry setbacks and balcony awnings.	Jacobs (1961). Gehl (Gehl, 2011; Mahdzar, 2008). Porta and Renne (Porta & Renne, 2005) Anderson (1986a).
Visual-Complexity	Here the visual-complexity of the built environment (street) is referred to as the variety of the streetscape at a multi-dimensional level (colours, street furniture, and street pavement).	Bentley (Bentley et al., 1985; Gibson, 1986; Scarantino, 2002), Kärholm (2007)
Sedibility	It is the possibility for places for seating that a public space offers (benches, chairs, curbs, stairs, etc.).	Whyte (Whyte, 1980), Gehl [8](Gehl, 2011; Blanco, Bosoer & Apaolaza, 2014; Salazar Trujillo, 2010).

However, there are uncountable activities occurring on the street. Hence, what kind of activities happening on the streets are ones that people can appropriate?

Activities and the temporary appropriation

Academics such as Sansot (1976), Kim and Kaplan (2004), Bolio-Arceo (2012) and Carmona (2014) claim that people only appropriate places in which they feel identified. Torres (2009) support such claims by arguing that the appropriation of public space has a strong value for people since it is culturally constructed by everyday activities. This implies that appropriation of the space plays a key role for peoples' cultural identities and their interactions with their environment. Thus, by not allowing it there is a risk of losing such cultural dimension.

Even though there is a wide amount of literature (Korosec-Serfaty, 1976; Gutierrez de Velasco Romo & Padilla Lozano, 2012; Alessandri Carlos, 2014; Fonseca Rodriguez, 2015) describing the importance of the use of the space in which people, through activities, appropriate public spaces, few studies have really specified or classified such activities. Table 5-2 identifies and makes an attempt to classify these activities happening in public spaces that lead to TA.

Table 5-2: Elements of the spatial configuration of street related to TA.

Activity	Description	Relevant author
Trade	Commerce and trade activities taking place on the street.	Ramirez Kuri (2010), Gutierrez de Velasco Romo and Padilla (2012)
Leisure	Activities related to leisure, such as arts or sports, occurring on the street.	Cranz (1982), Crouch (1998), Mouffe (Mouffe, 2007)
Sacralisation	Religious symbols (mostly catholic) placed in public space. This appropriation is characterised by the installation of crosses or altars in public space where people pray. See Figure 5-5.	Portal (2009a)



Figure 5-5: Altar on street in Mexico City Centre
(Lara-Hernandez, 2016)

Materials and Methods

The present research could be defined in terms of Groat and Wang (2013) as a correlational study. The present paper studies elements of the spatial configuration of the street that encourage/inhibit the TA within MCC. Two layouts are produced and overlapped. Firstly, the spatial configuration analysis, and secondly, the TA mapping. Lastly, the diversity index of the TA is obtained in order to compare both streets. The elements of the spatial configuration of the street are studied through images with a method introduced by Porta and Renne (2005). The TA is studied by a snapshot observation technique known as “activity mapping” (Francis, 1984; Mahdzar, 2008). The following section describes this process in detail.

According to the premises and the aims of the paper, the correlational study’s methodology has been adjusted to the specificity of the cultural context of Mexico City.

Spatial configuration analysis

Elements of the spatial configuration were analysed using a method developed by Porta and Rene (2005), which identifies the formal elements of the built environment that interplay directly with the social realm of the street as public space. These elements are identified as indicators that are represented in plans, bird-eye views (i.e. photographs), and sections. The

street indicators taken into consideration include land use diversity, softness, visual complexity and sedibility.

These indicators are individual components, that, as a whole, are related to the TA of the street. This separation will help us to understand the design features that support higher levels of diversity of TA. The measurements were taken using photographs along the street, 25m apart from one another. The camera was attached to a tripod at eye level to be sure that each picture captures the same field of view. Each photograph was analysed to collect the measurements for the indicators. Table 5-3 illustrates and describes the indicators and how they were assessed. As a part of ongoing research, the present article only illustrates the analysis and results of the *softness* indicator.

Table 5-3: Spatial configuration indicators description (Adapted from Porta and Renne (2005))

Indicators	Sub-indicators	Outcome
Land use diversity	Commercial (products, food, shopping centres, markets), health clinic centres, education, religious places, recreation and cultural centres, hospitality, places for public security and justice and parking.	The value of land use diversity is calculated using the Shannon Wiener Diversity Index (See Table 5-6). The high diversity value of land uses the higher the value of diversity of activities.
Softness	Transparency corresponds to the measurement of the window space/area that faces the street which allows the viewing of the inside and outside of buildings. Transitional space is a measure of spaces visually accessible from the public realm such as stoops, porticos, entry setbacks and balcony awnings	Transitional space and transparency are measured independently and the result of each will be averaged to obtain a single measure of softness. Polylines will be drawn using AUTOCAD to identify the presence of transparency and transitional spaces for their calculation. Both sub-indicators belong to a different nature, hence the data will be normalised* before calculating the average.
Visual complexity	Colours (high contrast, brightness, richness and the number of different colors). Street furniture (seating art, attractive lamp post, raised planters, etc.). Street pavement (changes in texture, colour, material, patterns and attractive ending).	This indicator is based on personal judgment. Each picture will be evaluated three times (one for each field) with reference to 1-5. The output will be calculated as the average of all three sub-indicators
Sedibility	Primary seating refers to the objects made for people to sit which includes benches and chairs (movable chairs have a slightly higher rating). Secondary seating refers to objects not specifically made for seating purposes but in which people are very likely to sit on. This encompasses walls, stoops, fountain borders, ledges, planters, sculptures, etc.	This indicator is rated 1-5 giving priority to the primary seating.

Temporary appropriation mapping

The diversity of activities as the expression of the TA occurring on the selected areas of study were observed and mapped. Table 5-4 illustrates in detail the type of observed activities. Activities occurring in the public space related to criminal behaviour (vandalism, etc.), to political protest and to transit purposes were not analysed.

Table 5-4: Activities in public related to TA.

Category	Commerce/service		Leisure			Sacralisation
Description	Any activity in which a person or group uses the public space in order to obtain an economic benefit directly or indirectly.		Any activity in which a person or a group uses the public space for leisure purposes.			Any activity in which a person or a group uses the public space for religious purposes.
Sub-category	Work	Trade	Sports and games	Artistic expressions	Rest	
Individual or collective	Advertising or promoting services, waiting, engaging or attracting possible clients.	Selling or buying products (food, hand-craft, clothes, etc.)	Skateboarding, football, cards, marbles, hopscotch.	Playing music, dancing, painting, acrobatics, reciting and singing.	Eating, resting	Processions, praying, lighting candles and putting flowers.

This research employs a technique known as “activity mapping”, which analyses the ground floor in relation to use of the street and its physical elements (Francis, 1984). This technique aids the understanding of the “temporal city” occurring in the urban space. The theory of this technique emphasises the interactive process between the physical environment and individuals. Such observations were noticed during the week, and at five timepoints within the day and in one hour period during these. The activities are mapped as a TA expression. The resultant map displays the precise time and location of the TA happening in the public space. The TAs which shape urban areas from a local context were the subject of the research. The observation was as follows:

Table 5-5: Observation method

Days of observation	Time of observation	Observation technique	Diversity analysis
Monday and Sunday	<p>1. 7:00 - 9:00 am. The first period of observation is selected according to the “rush hour” in the MCC. Offices, shops and schools usually start their operation at this time of the day.</p> <p>2. From 2.00 – 4.00 pm: The second period will be the lunch time. Many people use this time to take a break, to go out, and have lunch, therefore the chances of observed diversity of activities in public spaces are higher.</p> <p>3. From 6.00 – 8.00 pm: The third period is when the majority of the people end their activities.</p>	A three-round observation of two-hour periods will be carried out each day. Each two hours consists of 2 rounds of 15 minutes walking (to and from, totalising 30 minutes in each hour); i.e., 4 rounds per 2 hour slot. These rounds of observations are conducted in 6 snap shots at two 15 minutes walking snap-shots, per hour, per area in a one day observation.	The diversity of TAs is calculated using the Shannon-Weiner diversity index, which the formula comes as follows: $H' = -\sum p_i \ln p_i$ in which $p_i = 1/\log S$ (S=total number of elements). Thus, the higher the value of diversity index, the higher level of TAs. After calculating the diversity value of each street, the results can be compared and show which of the analysed streets have the higher value and therefore higher TA.

The sample, data collection and analysis

The purpose of the case study was to provide a scenario in which the relationship between urban design interventions and the appropriation of public space can be explored. MCC is currently in the process of urban transformations, and the majority of the interventions have taken place in a well-defined area, which is perimeter “A” of the city centre. Therefore, it was the perfect time to analyse the spatial configuration changes and their impact on the appropriation of the street. The selection of streets is explained in the following section.

Selected sample of Streets

Even though it is very difficult to compare two different urban areas, two streets that shared similar urban morphology and land use/function are proposed for the two case studies. Moneda Street and San Jerónimo Street share similar urban conditions listed as follows:

- Both streets are located within the same urban area. They are in Perimeter A of MCC and they are part of the master plan of urban design interventions orchestrated by the Autoridad del Centro Histórico (2016).
- Both streets connect an avenue and a square. Moneda St. links *Eje 1 Vidal Alcocer* and *Plaza de la Constitucion*, and San Jerónimo links *José María Izazaga Av.* and *Plaza de las Vizcainas* (Figure 5-6).

Both streets equally are populated and present a segment that is designated for pedestrian use only (source: Autoridad del Centro Historico, 2011).

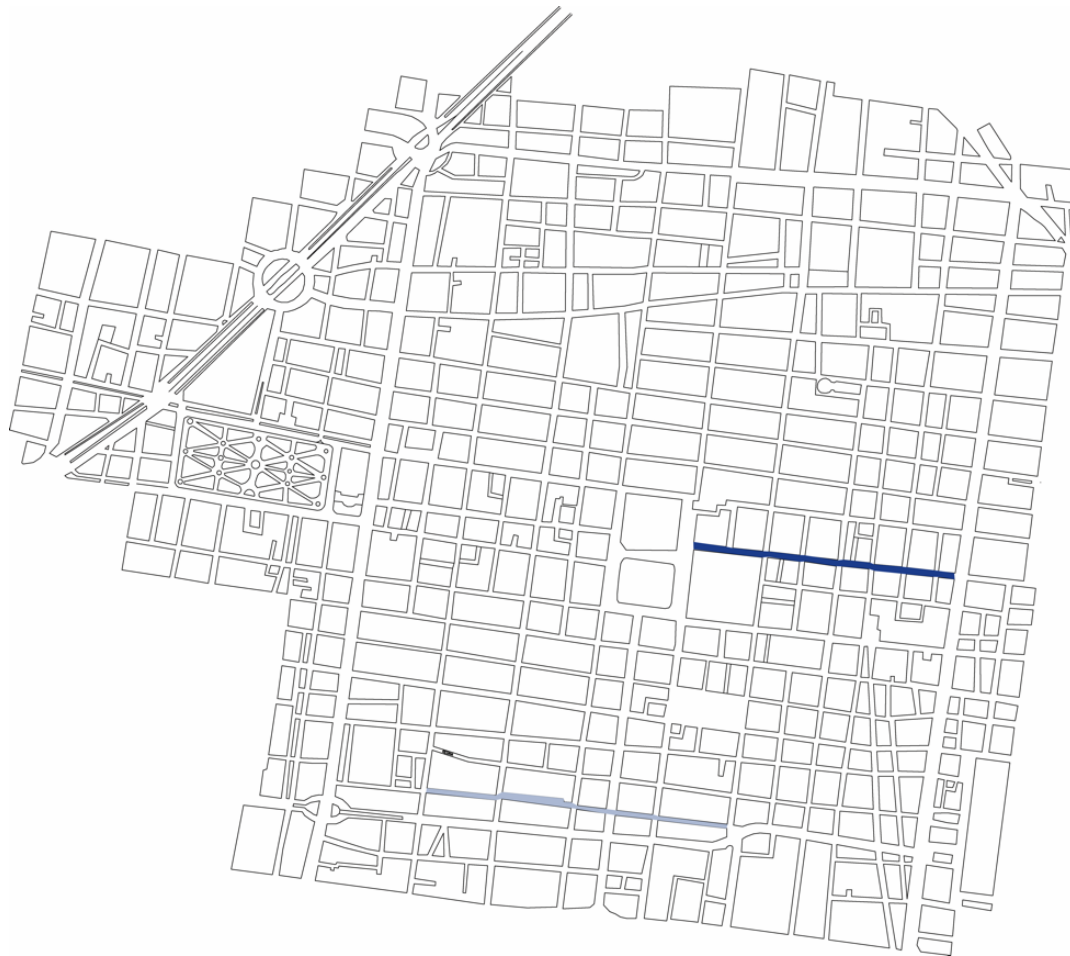


Figure 5-6: City Mexico City Centre. Areas of Study (Autoridad del Centro Historico, 2011)

Mapping and analysing data

The streetscape design and TA were processed in order to produce maps and a database of the two cases. The use of the AutoCAD and ArcView will allow the linking of polygons on maps of Moneda and San Jerónimo with the database. The resulting graphics were used for developing layouts for a deep comparison, indicator by indicator, for each of the two streets. The first layout corresponds to the photo-by-photo maps, and will be built on an average-and standard-deviation basis; the legend will indicate three tones of grey colour, one tone indicating the values below the average, another indicating the average value, and the final tone indicating the values above the average. TA map was overlapped to each of these maps to understand the correlation with the spatial configuration analysis. The latter allows an effective way to understand the overall characteristics of the two cases, and the identification of the main differences..

Results

Softness and the temporary appropriation

Figure 5-7 shows an overview of the softness indicator and the TA in San Jerónimo St. A total of 388 TA activities was observed. From this total number, 232 (59.7%) corresponds to the TA by commerce/service, 148 (38.1%) were classified as TA by leisure, and 8 (2.2%) as TA by sacralisation. On the one hand, the TA by commerce/services is strongly related to high levels of softness. On the other hand, the TA by leisure does not show any correlation to this urban design element. What is striking is that the TA by sacralisation seems to be present where the lower levels of softness are within the whole street.

MEXICO CITY/CENTRE

San Jeronimo St.



Figure 5-7: Softness and TA in San Jerónimo St.

MEXICO CITY/CENTRE

Moneda St.



Figure 5-8: Softness and TA in Moneda St.

Figure 5-8 presents the results obtained from the preliminary analysis of the softness attribute in Moneda St. A total number of 111 TA activities was observed. From this total, 62 (55.8%) correspond to the TA by commerce/service, 148 (44.2%) were classified as TA by leisure and no TA by sacralisation was observed. The results of the correlational analysis can be compared by two figures. Overall, TA in Moneda St. is more than three times lower in comparison with San Jerónimo St. It is apparent from this figure that TA in general is less observed in places with lower levels of softness. Even though Moneda St. presents lower levels of softness, in general this trend is consistent with San Jeronimo St.

Table 5-6 illustrates the Shannon-Weiner diversity analysis from both streets. The results, as shown in Table 5-6, indicate that San Jerónimo St. presented a more diverse TA in comparison with Moneda St.

Table 5-6: Shannon-Weiner Diversity analysis of TA

TA activity	Moneda St.			San Jeronimo St.		
	#	Pi	Pi*(LN(Pi))	#	Pi	Pi*(LN(Pi))
Selling products	10	0.090	-0.22	82	0.21	-0.33
Selling and preparing food	15	0.135	-0.27	55	0.14	-0.28
Advertising	18	0.162	-0.29	67	0.17	-0.30
Promoting services	19	0.171	-0.30	28	0.07	-0.19
Skateboarding	5	0.045	-0.14	23	0.06	-0.17
Football				10	0.03	-0.09
Playing cards	2	0.018	-0.07	2	0.01	-0.03
Hopscotch				3	0.01	-0.04
Marbles				2	0.01	-0.03
Playing music	2	0.018	-0.07	15	0.04	-0.13
Dancing	1	0.009	-0.04	10	0.03	-0.09
Singing	2	0.018	-0.07	20	0.05	-0.15
Painting				2	0.01	-0.03
Acrobatics	2	0.018	-0.07	3	0.01	-0.04
Reciting	1	0.009	-0.04	8	0.02	-0.08
Eating	22	0.198	-0.32	23	0.06	-0.17
Resting	12	0.108	-0.24	27	0.07	-0.19
Praying				4	0.01	-0.05
Lighting Candles				3	0.01	-0.04
Putting flowers				1	0.00	-0.02
TOTAL	111			388		
		SW Div	2.16		SW Div	2.42

Additionally, there is a surprising new variety of TA by commerce or services in Moneda St. First, Figure 36 shows a woman who was selling food hiding behind a phone cabin in Moneda St. As soon as a policeman approaches, she closes the portable device and pretends just to be waiting for something. Another variety of TA by commerce/services is shown in Figure 5-10, which illustrates a man who is using his own wheelchair as a mobile store.



Figure 5-9: Woman selling food hiding behind phone cabin (source: Authors)



Figure 5-10: Man in wheelchair selling candies
(source: Authors)

If we now turn to TA by sacralisation, this type of appropriation was not observed. There is a significant difference between two streets. First, the observed number of TAs is lower in Moneda St., even though the street has been physically improved. A comparison between the two figures reveals that the number of TAs observed is significantly different. San Jerónimo St. presents higher level and variety of TA in relation to the softness indicator. Taken together, these results suggest firstly that there is an association between high levels of softness and TA by commerce and services, and secondly that there are new types of TA at the streets of MCC.

Discussion and conclusion

Legeby (2013) argues that public spaces have an assertive capacity to enable different overlapping uses, which is highly relevant for urban design research. If such capacity varies, and such deviation could be identified and described, the variations in the capacity of places could be established (Legeby, 2013). Cities are in a constant process of transformation, and the way in which they are designed and redesigned might affect the rationale use of public spaces and its TA.

Some scholars such as Brown and Lombard (2014), Carmona (2015) and Ferguson et al. (2013), and practitioners such as Gehl (2013), Project for Public Spaces (2017) and BCNecologia (2019) argue that the improvement of the physical dimension of the environment

through urban design interventions leads to positive effects on social wellbeing (health, safety, sense of community, etc.). However, urban design interventions that transform the spatial configuration of protected heritage central areas in Latin American cities have led to different outcomes (Carrion, 2007). These different outcomes are key to the research gap and need to be investigated thoroughly. There is a lack of understanding of how the spatial configuration affects the TA of public spaces (streets) within this specific context (heritage city centres). The consequences may negatively affect the local cultural expressions, which the UNESCO declaration is trying to protect and preserve.

An initial objective of the project was to identify urban design elements of the spatial configuration of the street that support TA. Results clearly show that softness is, to some extent, an urban design element of the configuration of the street that contributes to the TA. The TA by commerce/services shows a clear relationship to softness. In general, therefore, it seems that the higher the levels of softness, the higher chances are of TA by commerce/services. Surprisingly, other activities, such as new types of TA, were found. This was unexpected, and suggests that the way in which people temporary appropriate the street in MCC is changing. This finding further supports the idea of Crossa (2009), who claims that the TA by commerce/services will remain in MCC even despite the efforts by authorities. Future studies on the current topic are, therefore, recommended.

The paper is an initial contribution to codify elements pertaining to urban design, such as materials, urban furniture and landscaping, while assessing their capability of encouraging an informal use of public space. This type of analysis builds on existing analytical tools, which are typically used to analyse formal indicators and sustainability, and sociability and accessibility of the street. The novelty of this study is to adapt these tools for the purpose of the study which is, mainly, to identify the urban design elements of the spatial configuration of the street that supports the TA. This study has identified a relationship between softness as an urban design element, and the TA in MCC. The second major finding was that there are emerging new types of TA that challenge formal prescriptions as counter spaces or spaces of resistance. In general, these findings suggest that, though aesthetically pleasing for tourist and visitors, the urban design interventions conducted in MCC in conjunction with changes in the urban landscape (physical and social) have resulted in the eviction of urban actors, thus eliminating lively social dynamics to which they were contributing. For instance, before urban design interventions, the public spaces used to be more diverse with different people carrying out distinct activities

(domestic workers chatting, indigenous groups gathering, families playing, religious groups predicating, vendors, clowns and mimes entertaining). This diversity of activities in public spaces is the expression of the TA. Activity diversification also means more opportunity of TA, and, consequently, more inclusiveness; currently, those opportunities have instead been decreased in the intervened areas.

Though the current outcome enhances our understanding of the relationship between the TA and the urban design in world heritage city centres, and adds to a growing body of literature on appropriation within the specific context, the scope of this study was limited in terms of urban design elements. Further research could usefully explore how other elements of the streets encourage spatial configuration. The present research is, therefore, intended as a first step aimed at establishing a methodology, within the defined theoretical framework, that is potentially extendable to other streets in MCC. This is in order to map the city extensively, and develop, in the future, urban tools taking into consideration the appropriation as a fundamental element in the use of the street as public space.

Further, the approach can be extended to other Latin American contexts where the understanding of the pattern of informal TA is pivotal to the improvement of the quality of life in the city whose roots lie in pre-Hispanic culture. In fact, the aforementioned cultural specificity in the use the public space, still evident today, is common to several Latin-American cities. Its understanding will limit the risks in compromising the quality of life, in addition to the identity characteristics and will contribute to inform future planning policies.

CHAPTER'S PREFACE

Previous chapters have highlighted the different flows and relationships that facilitates TA emergence. Chapter 2 and Chapter 3 have emphasised the cultural dimension, while , Chapter 4 and Chapter 5 have stressed the urban design aspect related to TA. However, the way in which public spaces are managed affects their rationale use. Thus, Chapter 6) focus on the regulatory framework of the case study (MCC), examining the laws and regulations set out by the government of Mexico City that norm the use of the street. This paper has been published with co-authors in the Journal of Public Space (Lara-Hernandez, Melis & Coulter, 2018). The chapter (paper) contribution disclosure comes as follows:

CREdiT Roles	
Title:	Chapter 6 Using the street in Mexico City Centre: temporary appropriation of public space vs legislation governing street use
Author	Role
J. Antonio Lara-Hernandez	Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Visualisation, Writing-original draft, Writing - Review and editing
Alessandro Melis	Conceptualisation, Formal analysis, Supervision, Writing - Review and editing
Claire M. Coulter	Investigation, Resources, Visualisation, Writing - Review and editing

CHAPTER 6 USING THE STREET IN MEXICO CITY CENTRE: TEMPORARY APPROPRIATION OF PUBLIC SPACE VS LEGISLATION GOVERNING STREET USE

Lara-Hernandez, J. A., Melis, A., & Coulter, C. M. (2019b). Using the street in Mexico City Centre: temporary appropriation of public space vs legislation governing street use. *Journal of Public Space* (UN-Habitat).

Introduction

The design of the street as a public space is highly relevant for more than simply physical or aesthetic reasons; it frames our understanding of social encounters in the public realm. The creation of environments that support social behaviour in places is one of the most important roles of urban design (Mehta, 2013).

Human beings have the inborn need to interact with each other. Mumford (1938) claims that the city, above all else, is a *theatre of social action*. This suggests that there is a *dialogue* between people and physical spaces or environments. This dialogue is spatialised through people's activities occurring in the spaces, and has been defined differently throughout time. For instance, *street ballet* by Jacobs (1961) or the *space of contact* by Choay (2001b), in where all the different social encounters happening in the street, such as children playing, people walking, or sitting at a table drinking coffee, mean that public spaces in cities are the physical environment where this interaction between citizens takes place. According to Rywert (Anderson, 1986a), the expectation of daily human contact that public space offers is unique. When public spaces do not allow this contact, one of the possible risks is a rise in alienation, which contributes to social stress, unused space, and an increase in crime rates. Moreover, since cars have taken over most of the street space, the only place where the *street ballet* occurs is on the sidewalk (Minnery, 2012). The street is the immediate public space where urban life is evidenced.

In this paper we explore how the use of public space is currently regulated in Mexico City Centre (MCC), and how this differs from the ways in which public space has historically been used. We note the discrepancies and loopholes in current legislation, and show how the day to day use of public space in MCC occurs alongside, and sometimes despite, legislation.

With a total population of over 21 million Mexico City forms the core of the fourth largest urban agglomeration in the world, and is both the world's largest Spanish speaking city and the largest city in the Western hemisphere (United Nations, 2014). It is a forerunner of the trend towards the growth of megacities in the Global South, and its residents are part a deeply

unequal society, where wealth is concentrated in the hands of the few and where informal commerce and construction have become a means of survival for many. It also experiences high numbers of people coming into the city each day for work, leisure and other pursuits (Nivon Bolan & Sanchez Bonilla, 2014; Villanueva *et al.*, 2012). The size and population structure of Mexico City make it an interesting choice for exploring how public space is currently being used in a global megacity, and for hinting at how the use of public space may change in other rapidly expanding Latin American urban centres. As Herzog (2004) notes, “Mexico City encapsulates what we might call the ‘yin/yang’ of globalization—it houses both the best and the worst of our global future.”

The paper is divided into three main sections. The first outlines the concept of temporary appropriation (TA), and discusses its relevance as a theoretical concept for understanding the relationship between people and places. The second section attempts to clarify the legal framework that regulates the use of streets in MCC. The third section places the concept of TA within the specific research context, in this case MCC. It explores historical and contemporary uses of public space in MCC, and the varying ways in which TA can be categorised within this research setting. The legal framework for street use stands in contrast to the way in which streets are actually being used, and forms the basis for the discussion of perceived, actual and desired use of public spaces within MCC, viewed through the lens of TA. Finally, we conclude by showing the tension between the popular and legislative use of the streetscape, and suggest areas where this could be further explored in future.

Temporary appropriation in the urban context

Temporary appropriation is relevant as a theoretical concept for understanding the relationship between people and public spaces. Although there is no formal definition of appropriation, other theories incorporate and approach the concept, claiming that it plays a key role in creating the bond between people and places that leads to the social construction of public spaces. In previous work we have explored in depth how TA can offer a valid alternative way of reading the urban landscape (Lara-Hernandez & Melis, 2018), looking at the development of the idea of *appropriation* from its first use in this context in Korosec-Serfaty (1976) and Sansot, (1976). We show how more recent work on appropriation, such as the topophilia theory of Yory García (2011; 2003), fits with Lefebvre (1971), who argues that without appropriation, the domination of nature does not have a purpose; there is no urban realm if public spaces are not appropriated.

TA is an individual, social, and spatial need that cannot be underestimated when it comes to urban studies, and forms the vital theoretical link between people and places (Lara-Hernandez & Melis, 2018). Fonseca-Rodriguez (2015) provides a definition incorporating the temporality of the concept by defining temporary appropriation (TA) as “the act in which people use public spaces to carry out individual or collective activities other than the purpose that the space was originally designed for”. This definition helps us to better conceptualise TA as an urban phenomenon.

Looking at the context of MCC, although a considerable amount of literature (Gehl, 2014; Jacobs, 1961; Whyte, 1980) discusses and analyses the physical attributes of the built environment for the purpose of creating lively and inclusive public spaces, studies on the subject in Latin America have only focused on the processes of segregation (Oehmichen, 2010), gentrification (Martinez-Ramirez, 2015), and exclusion (Bayón, 2008) occurring in city centres. Alternative authors, such as Carrion (2013), Garcia Espinosa (2005), Hernandez Bonilla and Gomez Gomez (2015) and Hidalgo et al. (2008) deal with the effects caused by transforming the built environment to create public spaces in city centres in Latin America, however they fail to consider the new public spaces in terms of their ongoing use and TA by the public, let alone exploring the current legal framework that defines the uses permitted for each space in the local context.

Forms of temporary appropriation of public space

Public spaces are the arenas in which many activities can occur, ranging from leisure pursuits to political protests. Nevertheless, not all activities are the spatialised expression of appropriation. According to Sansot (1976) people only appropriate places which they identify with. Torres (2009) argues that the appropriation of public space is strongly valued by people, since it is culturally constructed by everyday activities. This implies that appropriation of the space plays a key role in people’s identities and their interactions with their environment.

Even though a breadth of literature describes the importance of the use of the space in which people, through their activities, appropriate public spaces (Korosec-Serfaty, 1976; Gutierrez de Velasco Romo & Padilla Lozano, 2012; Alessandri Carlos, 2014; Fonseca Rodriguez, 2015), few studies fully specify or classify such activities. Activities relating to trade and commerce commonly occur in public spaces and are associated with appropriation,

however there are uncountable other activities occurring besides those linked with profit. Furthermore, while discussing public spaces as a concept we commonly tend to associate this with parks or squares, leaving the street aside. Scholars such as Jacobs (1961), Mourdon (1991), Jacobs (1993), Choay (2001b), Gehl (2011), Kim (2013) have described the street as a quintessential public space within the urban realm. The street is a versatile space because even when its meaning is shaped it can be changed, boundaries can be re-defined, new activities can take place and its time management may change too (Mehta, 2013). The space where this conflict is most evident is in public space, commonly in the streets, which is the place that serves as the locus of collective expressions for those who are deprived of institutional settings to disagree (Roy & Alsayyad, 2004). Deleuze and Guattari (1989) suggest that the street is the space for the operation denominated *overcoding* by excellence in which community, state and tradition super impose their code with concrete implications towards the urban realm. The street as urban space is under constant tension between its function as infrastructure and as public space.

As indicated previously there is an infinite number of activities that public spaces could host, however we attempted limit our investigation to those activities in the street which can be classified as those where people appropriate public space. Only by identifying and classifying these forms of TA will it be possible to achieve a deeper understanding of such activities, and their relationship with the street as a public realm. The broad categories that we identified are explored in detail in the paragraphs which follow.

Economic actions and temporary appropriation

According to Ramirez Kuri (2010), there are three types of TA related to commerce or services. First, people such as vendors or workers use the space with or without the authorisation of government authorities; second, people work in public spaces as an extension of their place of work because it is close by; lastly, people gather in the public space, with clients who travel there to find them and use their services, such as mariachi bands. Gutierrez de Velasco Romo and Padilla (2012) agree with the identification of these three types of the occurrence of TA of public spaces in central areas. Even though informal commerce on the street is usually perceived as an undesirable activity by governments in different cities (Ramirez-Lovering, 2008; Kim, 2013), it is without any doubt an activity in which people worldwide temporarily appropriate the street.

Leisure and temporary appropriation

Activities related to leisure, such as arts or sport, are also evidence of TA. Cranz (1982) claimed that recreational and leisure activities occurring in public spaces, such as parks, have a strong

influence on urban political processes in North American culture. Crouch (1998) explores the significance of the street as an everyday site of geographical knowledge and leisure practice, revealing the rituals and relationships, and practices and representations which are played out routinely on the street. He also states that the design of both the streets and the buildings dictate the experience of a place. Both authors imply that through leisure and recreational activities, people appropriate public spaces; it is emotionally beneficial when people participate in leisure activities in public spaces because they feel comfortable to do so, but it is even more important that they feel as if they own the space.

Sacralisation and temporary appropriation

In countries with a strong religious cultural background, another activity in which people appropriate public spaces is through sacralisation. Portal (2009a) describes the term sacralisation by referring to religious symbols (mostly Catholic) being placed in a public space. This form of appropriation is particularly characterised by the installation of crosses or altars in public spaces, where people may pray. According to Portal (2009a), there are two main causes for this kind of appropriation. First, as an act of personal or familial commemoration, for instance because a friend or relative has died on the site or close to it. Portal (2009a) notes that for violent deaths, a cross can be seen as a way of helping the soul to find peace on its onward journey. In other situations, flowers and other artefacts can be placed on the site to mark the place where a death occurred, appropriating the space for personal commemoration. The second cause to mark or define territories at the boundary of a determinate area or neighbourhood, and can be used to reduce anti-social behaviour within a designated area ((Portal, 2009a, 2009b). Santino (1992) explores this idea further, noting that artefacts forming public displays of commemoration not only invite spectatorship, but through their invitation to bear witness, involve passers-by otherwise unconnected to the event in the act of TA, as outlined by Habermas (1991) through his ideas on shared civic interest.

Summary

People make use of public space for a variety of reasons, and to undertake a wide assortment of activities. We have aimed to categorise these as simply as possible under the broad headings of economy, leisure and sacralisation, but appreciate that under each of these headings a complex network of activities is taking place. Table 6-1 provides an overview of the activities in which people temporarily appropriate public spaces. In the section which follows we will

explore how these forms of activity take place within MCC, looking at specific examples from historical sources as well as from the present.

Table 6-1: Activities in the public space related to temporary appropriation (Source: Lara-Hernandez, Melis & Caputo, 2017).

Category	Economy		Leisure		Sacralisation	
Description	Any activity in which a person or group use the public space in order to obtain an economic benefit directly or indirectly.		Any activity in which a person or a group use the public space for leisure purposes.		Any activity in which a person or a group use the public space for religious purposes.	
Sub-category	Work	Trade	Sports-games	Artistic expressions	Rest	
Individual or collective	Advertising or promoting services, waiting, engaging or attracting possible clients.	Selling or buying products (food, handicraft, clothes, etc.)	Skateboarding, soccer, cards, marbles, hopscotch.	Playing music, dancing, painting, acrobatics, reciting and singing.	Eating, resting	Processions, praying, lighting candles and putting flowers.

The official use of the street in Mexico City Centre

We analysed the laws and regulations approved by the government of Mexico City regarding the use of the street using document analysis (Bowen, 2009). In addition, in order to gather further information about how the street (as public space) is actually managed, an interview was conducted with the general coordinator of *Autoridad del Centro Historico*, aimed at collecting information on temporary appropriation and whether it is being considered at street management level.

Mexican laws and regulations regarding street use

Several laws and regulations in Mexico City (Gobierno del Distrito Federal, 2016, 2015; Asamblea Legislativa del Distrito Federal III Legislatura, 2004; Gobierno del Distrito Federal, 2013; Gobierno de la Ciudad de México, 2014) refer to the use of streets and the activities that are allowed to happen in them. Table 6-2 summarises the information found in Mexican laws and regulations.

In 2004, the *Ley de la Cultura Civica del Distrito Federal* (Law of the Civic Culture of Mexico City) was approved by the government, and establishes how citizens should behave in public spaces and neighbourhoods. The 15th article of Chapter I/Second Title states that it will guarantee the harmony and coexistence of its inhabitants through the fulfilment of their duties, such as a) the freedom of people's actions in public spaces, and b) by allowing the proper use of public spaces according to their nature.

In 2013 a more specific law was approved: the *Ley para el uso de las vías y los espacios públicos del Distrito Federal* (Law for the use of streets and public spaces in Mexico City), which establishes the right to use and enjoy public spaces, especially streets that are used in different ways, rather than streets being just for motor-vehicles. Article 6 states that users of public space (including streets) have the right to use the property for common use according to its nature, and have the right to access, stay and transit in streets. Article 7 establishes that public space users have the duty to access, use, stay in, or transit through public space without disturbing other users. Both laws clearly refer to the social dimension of streets as public spaces.

Other laws, such as *Reglamento de Transito del Distrito Federal* (Transit Regulations of Federal District) and *Ley de Movilidad de la Ciudad de Mexico* (Law of Mobility of Mexico City) establish the free access, use and transit of pedestrians, cyclists and motor-vehicles in streets and roads. They also establish that streets should be free of obstacles or elements that impede or hinder pedestrian traffic, except in authorised cases. Both laws give priority to pedestrian movement; and they acknowledge different uses for the street beyond just movement.

Moving beyond laws aimed at traffic regulation and mobility, socio-urban researchers, such as Campos Cortes & Brenna Becerril (2015) and Ramirez Kuri (2010; Anon, 2016), argue that the codes compiled by planners and urban designers have focused on the economic development and formal aspects of the area, rather than including lessons from other fields dealing with social and cultural aspects. Urban design interventions have been implemented according to a master plan, titled *Plan Integral de Manejo del Centro Histórico de la Ciudad de México* (Management Plan for México City Centre), which involves pedestrianisation, change of pavement, sidewalk expansion, and the addition of urban furniture as well as lighting and trees. According to Flores Arias (2015), even though physical improvements of public spaces in MCC are the result of a plural approach (involving the opinion of the academic sector, government, experts and general population), they are implemented in a top-down manner, and as a result, do not represent the interests of the population (2015). Though aesthetically pleasing for tourists and visitors, the urban design interventions conducted in MCC in conjunction with changes to the urban landscape (physical and social) have resulted in the eviction of urban actors, thus eliminating the lively social dynamics that they were contributing to (Campos Cortés & Brenna Becerril, 2015; Martinez-Ramirez, 2015). These planning policies are just as significant for the use of public space as the laws cited in Table 6-2, and yet they are far less accessible and therefore less open to debate and to discussion.

The view of the authorities on temporary appropriation

As stated above, we conducted an interview with a key figure in the local city administration to collect a fuller picture of the official understanding of TA in the streetscape. The answers provided in Table 6-2 help to give a picture of the government's working policy on TA activities. On the one hand, it clearly shows that there is an aversion towards economic activities related to work, and particularly towards trade and commerce. On the other hand, activities related to leisure such as sports and games, artistic expression, resting, religious activities and pedestrian use are strongly welcomed. The single most striking observation to emerge from the data was that many of the activities which were reported as desirable could actually be categorised as obstacles for pedestrians, and consequently convene the official legal position. As a result there is some discrepancy between the written legal and the day-to-day official views regarding activities that are welcome to occur in the street in MCC.

Summary

The laws regarding the governance of Mexico City specify that public spaces (streets and squares) must be accessible for every citizen without any distinction or impediment (Gobierno del Distrito Federal, 2013). Mexican citizens have the right to appropriate public spaces and streets, and streets exist for more than just transit purposes. Furthermore, citizens must respect other street users and respect their rights to use the street area as they wish, so long as this does not impede pedestrian traffic or cause a disturbance of the peace. There is no specific mention of a ban or prohibition on commercial activity, or any further restrictions placed upon the types of activity which can peacefully be enjoyed, other than the vague reference to streets being used according to their nature.

This is not the way in which the authorities would like the street to be used. Official policy would rather that commercial activities be restricted, and that the street be primarily used for transit and leisure. Maintaining pedestrian access was not a priority, and some of the activities that were given preference would directly impede pedestrian traffic. This is supported by official urban planning policies, which give preferential treatment to the tourist experience of MCC and often disregard the needs of local residents and habitual users of the street area who rely on this space to conduct activities central to their day-to-day life.

Table 6-2: Laws and Regulations about the use of streets in Mexico City (translations: Authors)

Name	Law for the use of streets and public spaces in Mexico City (Gobierno del Distrito Federal, 2013)	Law of the Civic Culture of Mexico City (Asamblea Legislativa del Distrito Federal III Legislatura, 2004)	Law of Mobility of Mexico City (Gobierno del Distrito Federal, 2016)	Transit Regulations of Federal District (Gobierno del Distrito Federal, 2015)	Citizen Manual for the care of City Centre (Gobierno de la Ciudad de México, 2014)
Generalities & Functions	Stabilised the right to use and enjoy the public space, including streets used in a different way rather than for motor-vehicles. The public space is considered as an ambience or scenery of social integration, where the right of association and the right of the others to use the same space, its appropriation (accessibility, permanence and enjoyment) of the space, the collective space, the space for everybody.	It establishes the minimum rules of citizen behaviour.	It dictates the laws for mobility purposes in Mexico City.	It regulates the use of streets and roads of Mexico City.	It is a manual for citizens that use MCC.
	Specific articles that mention the use of public space	<p>Art 6th. The users of public space and streets have the right to I. Use the property of common use according to its nature and destiny; II. To access public spaces and streets; III. To stay in public spaces and streets; IV. To transit in public spaces and streets.</p> <p>Art 7. The duties of the users are: I. To use the public space and streets according to their nature and destination; II. To exercise their rights without disturbing the order and public peace, or affecting the developing continuity of other inhabitants' activities.</p>	<p>Second Title of the Civic Culture and neighbour's participation. Chapter I. Art 15. The Civic Culture in Mexico City, which guarantees the harmonious coexistence of its inhabitants, is based on the fulfilment of the following citizen duties. VI. To allow the freedom of action of people in public spaces and streets. X. Make proper use of public goods, spaces and services according to their nature and destination.</p>	<p>Art 5. Mobility is the right of every person and the community to carry out the effective movement of individuals and goods to access through the different modes of transportation recognized in the Law, a mobility system that conforms to the hierarchy and principles that are established in this order, to meet their needs and full development. In any case, the object of the mobility will be the person.</p> <p>Art 13. For the fulfilment of the present Law and the ordinances that emanate from it, Public Security will have the following attributions:</p> <p>III. Maintain within the scope of its powers, that the road is free of obstacles and elements that impede, hinder or impede vehicular and pedestrian traffic, except in only authorized cases, in which case, as far as possible, they should not obstruct the accesses for persons with disabilities.</p>	<p>Art. 1. The purpose of these regulations is to regulate the circulation of pedestrians and vehicles on public roads and road safety in Mexico City. Art. 6.- The Public Administration will provide the necessary means for people to freely choose the way to move in order to access the goods, services and opportunities offered by the City. The level of vulnerability of users, the externalities generated by each mode of transport and their contribution to productivity will be considered for the establishment of public policy in this area. Priority will be given to the use of road space and the distribution of budgetary resources will be assessed according to the following hierarchy of mobility:</p> <p>I. Pedestrians</p>

Table 6-3: Questionnaire response from Autoridad del Centro Historico ⁵.

To what extent is it desirable for these activities to happen on the street?						
Activities	very sired	de- moderately desired	somewhat	minimally desired	not at all	
Work	5	4	3	2	1	
Trade	5	4	3	2	1	
Sport/games	5	4	3	2	1	
Artistic expressions	5	4	3	2	1	
Rest	5	4	3	2	1	
Religious activities	5	4	3	2	1	
Pedestrian use	5	4	3	2	1	
Demographic study						
Do you live in MCC?				(y)	(n)	
Do you work in MCC?				(y)	(n)	
Do you live in San Jerónimo St?				(y)	(n)	
Do you work in San Jerónimo St?				(y)	(n)	
Do you live in Moneda St?				(y)	(n)	
Do you work in Moneda St?				(y)	(n)	

⁵ The Faculty of CCI Ethics Committee reviewed the questionnaire (Appendix 4) prior the study.

Appropriation of streets in Mexico City Centre

Mexico City Centre: historical use



Figure 6-1: MCC perimeters (source: Autoridad del Centro Historico, 2011)

Mexico City Centre (MCC) is the biggest colonial historic centre in America, with a total area of 9.1 km² and a population of 61,22 (INEGI, 2018a). In terms of planning, MCC has the Spanish grid commonly used in Latin American colonies, starting from the main square, the church and the council building (see Figure 6-1). The streets of Mexican cities are public spaces that are key for urban life, even prior to the Spanish colonisation. The pre-Hispanic civilisations were characterised by the intensive utilisation of the outdoor spaces for everyday activities (Keller, 2006; Suárez Pareyón, 2004). The Aztecs founded the city of Tenochtitlan, the urban pattern of which was compounded by blocks, streets and channels. The Aztecs used the channels for communication purposes, while streets were reserved for a diversity of activities such as trade, leisure, religious celebrations and even sacrifices (Leon Portilla, 1995). The public spaces in which the social, political, economic and religious lives of people occurred were the streets (Webster & Sanders, 2001). Informal activities were an essential element of street life in Tenochtitlan, especially for the common people, as shown in Figure 6-2 (Crossa, 2009).



Figure 6-2: The great Tenochtitlan, mural by Diego Rivera Exhibited in the Palacio Nacional in Mexico City (source: Rivera, 1945)

In the 16th century, during the Spanish colonisation, a new urban planning pattern was established over Tenochtitlan, transforming the city (Stanislawski, 1947). The conquerors tried to regulate informal activities (trading, playing, religious expressions) that happened on each specific street for each activity with a singular order (Nelson, 1963), by confining them into specific places, such as squares in the Spanish tradition. They succeeded for a short period of time, but as the city grew, the confinement of informal activities was not viable anymore. As Monnet (1995, 1996) and Portal (2009b) describe, this informality is still palpable in the streets of MCC, and is easily visible to observers.

Mexico City Centre: the current situation

In 1987, UNESCO declared MCC a world heritage site. Although the declaration has triggered a process of urban design transformation intended to beautify the built environment, Diaz Parra (2014), Oehmichen (2010), and Ramirez Kuri (2015) have pointed out that this has not necessarily led to the planned improvements urban life, and has occurred to the detriment of the TA of public spaces. Hiernaux-Nicolas (2005) suggests that there has been a symbolic privatisation of heritage in favour of the dominant class and commercial recovery, challenging the strategies promoted by the entrepreneurial urban governance and in doing so creating counter-spaces. As an example of this, one of the strategies of the transformation program was the removal of street vendors from perimeter A (see map in Figure 6-1) (Autoridad del Centro Historico, 2011). As a result of this action, the use of public spaces in MCC has changed, with

a collateral effect on the relationship between urban design and TA of public spaces. As part of our research into the use of public space (Lara-Hernandez, Melis & Caputo, 2017; Lara-Hernandez & Melis, 2018) photographs were taken in MCC during 2017 showing different activities taking place in the street and in public squares. Many of these activities clearly show public space being temporarily appropriated by members of the public, and fall into the three categories discussed previously. We also found instances of official use of public space which fell under TA, as well as activities which were unexpected, and which defied our original categorisation. The three main categories, as well as the outliers, will be discussed in turn below.

Economic actions and temporary appropriation

Looking at economic forms of temporary appropriation, there is evidence of disruption or disarrangement to the everyday practices of residents, indigenous artisans, and many local vendors, impacting directly on the economy of many families. This has altered the traditional Mexican way of living in cities, which even before the Spanish colonisation was and is about socialising and trading outdoors. According to Crossa (2009), even though the strategies implemented by MCC's *Programa de Rescate* have attempted to remove informal commerce from streets, street vendors have found ways to resist, and they have become *toreros* (a term referring to Mexico City's nomadic vendors), and they are still working in the area. For instance, street vendors in Moneda St. place their merchandise on a cloth on the ground that can easily be gathered up if necessary (see Figure 6-3 left). A "guardian" with a walkie-talkie is constantly looking out for the presence of authorities (see Figure 6-3 right). Once the "guardian" has spotted the authorities he notifies the street vendors who immediately collect their merchandise and go and hide in a building nearby (see Figure 6-4 left). In a matter of seconds the whole temporary market has vanished (see Figure 6-4 right).



Figure 6-3: Street vendors in Moneda St. (left), Street vendors' guardian with walkie-talkie (right) (Source: Authors)



Figure 6-4: Street vendors hiding in buildings nearby (left), street vendors have left the street (right) (source: Authors)

As we have seen, the law regarding street use in MCC primarily protects the rights of pedestrians to have access to the street for transit. In further examples of commercial driven TA, citizens as both consumers and entrepreneurs have found ways to work around the law, for example by placing small chairs and tables right next to the edge of a building (see Figure 6-5 left). The street which remains a viable place for transit thus simultaneously also becomes an open-air dining area. Similarly, in the example illustrated in Figure 6-5 (right), a hair treatment is being carried out using a bollard as a hairdresser's chair, with the street becoming briefly an urban salon. Moreover, even employees of governmental institutions such as the police or refuse collectors temporarily appropriate the street for their own purposes. Figure 6-6 (left) shows police officers holding their morning meeting in the street, while Figure 6-6 (right) shows a line of refuse collectors lining up to receive their weekly payment. In both of these examples people temporarily appropriate the street, using the space as an urban open office.



Figure 6-5: People eating on the street (left), woman doing hair treatment on the street (right) both in Moneda St. (source: Authors)



Figure 6-6: Police officers in an ordinary morning meeting (left), refuse collectors getting their weekly payment (right) both in San Jeronimo St. (source: Authors)

Leisure and temporary appropriation

Looking at leisure activities, Delgadillo (2014) describes the planning policies that have been implemented as part of the urban beautification process. *La Alameda Central* (the largest park in MCC), used to be appropriated by families, minority groups, religious groups, mimes and even musicians. After the urban design transformation that took place in 2013, this type of appropriation is not happening anymore (Martinez-Ramirez, 2015). The new policies allow the government to displace users who are perceived to be informal, suspicious or misbehaving; to pursue an official cultural programme of free cultural and leisure events which prevent the free use and public dimension of this space; and to follow a zero-tolerance agenda, including an increase in police officers and surveillance in the area (Delgadillo, 2014).

In contrast to the traditional, family-centric and group-oriented use of the street, many of the examples of leisure related TA that we observed in MCC were more individual in nature. In the examples shown in Figure 6-7 we see a man napping and a woman knitting; two individuals make use of a small peripheral area at the edge of a street or square, and their chosen activity does not invite interaction with the wider public. Figure 6-8 shows more complex use of the street area, and highlights how TA can take multiple forms, in this case both economic and leisure-based. In the left hand picture a workshop takes place outside a church, in the right hand picture a woman is playing the violin in the street. Although both of these activities could plausibly be primarily economic in nature, their ability to be enjoyed or participated in by the wider public extends them beyond merely commercial forms of TA.



Figure 6-7: Man in wheelchair taking a siesta (left), Woman knitting (right) (source: Authors)



Figure 6-8: Open-air workshop (left) woman playing the violin (right) (source: Authors)

Sacralisation and temporary appropriation

The third category of TA that we expected to find in MCC relates to religious activities. Whilst we observed traditional street altars occupying space within the street (see Figure 6-9), we also found unexpected instances of TA which could be categorised under sacralisation. The celebration of *Día de los Muertos* (day of the dead) in Mexico is a well-known as a family gathering to remember deceased family and friends. It is a national celebration in which the whole community participates. Although prostitution is a practice which is not commonly associated with family values, the prostitutes of *La Merced* (a neighbourhood adjacent to MCC) gather together on this day and make their own public *ofrenda* (Castrejon-Arcos, 2012; Redacción ADN, 2015). Figure 6-10 illustrates how despite the laws, regulations and the social stigma, the prostitutes of *La Merced* temporarily appropriate the street to celebrate *Día de los Muertos*.



Figure 6-9: Street altar in Mexico City Centre (right) (Source: Authors).



Figure 6-10: Prostitutes celebrating *Dia de los Muertos* in La Merced (source: Castrejon-Arcos, 2012)

Other categories of temporary appropriation

Although our previous work had suggested three definitive categories for TA, we found other examples of street use in MCC that did not fit neatly into any of these categories. Firstly, we observed that some health institutions temporarily appropriate the street, providing their services in the open-air for the benefit of the citizens (see Figure 6-11).

Another example are the daily protests that take place in Mexico City (see Figure 6-12). Between 2015 and 2017 there were more than ten thousand protest events registered by *Secretaria de Seguridad Publica* (City Security Department) and *Secretaria de Gobierno* (City Council), an average of nine protests every single day (Arredondo, 2018). By law (Gobierno del Distrito Federal, 2013) citizens willing to take part in a protest utilising the public spaces (squares or streets) must to give notice to the authorities 72 hours prior the event. The authorities however

state that just over half of these events receive advance notification, highlighting how the citizens' use of public spaces is embedded as a right in the context of Mexico City.



Figure 6-11: Nurses conducting tests to diagnose diabetes (source: Authors)



Figure 6-12: Protest against the education bill (Source: Authors)

Discussion

Temporary appropriation of the street, and the laws and regulations of MCC

As mentioned in the conceptual discussion, certain activities occurring in public spaces are considered TA, playing a key role in creating the bond between people and places, and consisting broadly of activities relating to commerce, leisure and religion. The current economic situation in MCC, whereby the built environment has been maintained and improved, may have had a positive impact on the tourist experience, but has arguably had a less favourable impact on everyday socio-urban conditions, which according to Van der Aa (2005), is a condition of many other heritage sites worldwide.

Some authors (Ramirez Kuri, 2008; Saraví, 2008; Alessandri Carlos, 2014) claim that planning regulations imposed on the use of public space are putting the inclusive and pluralistic nature of these spaces at risk. This situation poses a threat to the TA of public spaces, which according to Purcell (2002), is one of the key ways for citizens to exercise their right to the city. A space that is not formally equal for everyone can hardly enhance participation in solving fundamental urban issues such as diversity, governance, and inclusion. What is significant here is that the legislation that governs the use of the street in MCC is fairly loose, reserving only the right for pedestrian transit and maintaining the peace. In addition to this, the right to temporarily appropriate public space is tacitly recognised as a right in all of the laws and regulations that we reviewed. It is not until we begin looking at internal policy and communication that the discussion around appropriate and desirable forms of TA begins to emerge. The city's urban regeneration plan clearly focuses on leisure activities as the key driver of activity in the area, with as much of a stress on maintaining the historic centre for visitors to view and appreciate as for the local population to enjoy. Furthermore, our interview with director of a governmental institution showed that activities related to leisure and religion were considered desirable, whilst commercial activity was to be discouraged, even though the demographic section of the questionnaire shows that the respondent is fully aware of the urban dynamic happening in the area. In contrast to the arguments made by Janoschka and Sequera (2014), Delgadillo (2014) and Ramirez-Kuri (2015; 2016) that regulations have been imposed on public spaces that hinder TA we have instead found that the regulations themselves are vague and lack definition, and that it is internal planning policies, that come under far less public scrutiny, which are forming the backbone of the effort to modify street use in the area.

The changing use of the street

Although the use of public space is changing, it is significant that the urban actors have not been totally evicted, rather the way in which they temporarily appropriate the streets has changed. Whilst we observed the expected categories of economic, leisure and religious activities, we saw this appear in unexpected ways, as well as ways which we were unable to fit into these categories. We observed how TA is not only occurring in the acts of private citizens, but also in a semi-official context. Police meetings, governmental staff pay queues, and publicly administered healthcare were all observed happening in the street. Likewise we were surprised to observe acts of TA from groups that would otherwise be considered controversial, but which were permitted within a specific time or context. The example of the prostitutes celebrating on *Día de los Muertos* highlights just how flexible the boundaries of TA can be, whilst the use of the street area for public protests reinforces what we found in the legislation, that citizens have the right to appropriate public space as long as they do so peacefully and preserve pedestrian access.

The legislation that we surveyed was not particularly specific on how the public may make use of the street, although internal governmental policies on street use were much clearer. Similarly the finding that around half of public protests do not notify the authorities in advance, but apparently without any issues, suggests that where TA is concerned there is a form of legal pluralism occurring in MCC, where state law, religious law, indigenous law, customary laws and local conventions all co-exist, and combine to govern the actual use of the street. In such plural realm the law of the state is not necessarily the dominant one. Furthermore, the state might not actually have the capacity to enforce the law (McAuslan, 2006). In this scenario customary law could have much more influence on how activities are conducted in public, with the written law, conventionally taken as formal, being considered informal and beneath consideration in practice.

The key finding from our research is that although activities were occurring that might strictly be considered illegal, nothing was happening that did not respect the spirit of the law. Informal commerce respected the requirements of pedestrian traffic, prostitutes celebrated a national holiday without disturbing the peace, political views were shared and governmental meetings were held in the same public arena and no one visibly questioned the right for the street to be used in any of these ways. Although some activities were deemed more desirable than others, there is no official consensus on the limits of permitted TA within MCC, and the streets continue to be used for a wide range of activities as a result.

Conclusion

This paper has shown that TA of the street is crucial for maintaining socio-urban dynamics in the contemporary city. Looking at the literature on TA we attempted to compartmentalise activities consisting of TA in MCC into three specific groups: economic actions, leisure activities and religious practices, however the full range of activities occurring within the street area were much wider than this and extended to include political activity, healthcare practices, and official governmental business. Compared with the legal position, which made no specific mention of permitted activities, and regeneration policies that indicated that informal commercial activity was undesirable, the day-to-day use of the street appears to reflect the practical needs and wants of the local population, even if they are required to be creative in finding ways to conduct business as normal.

Some authors have noted a decrease in certain types of TA within MCC, leading to a change in the way that the street is used and a loss of inclusivity. The official laws and regulations appear not to be the cause of this, but there is some conflict between how the authorities address the management of public space and how people have previously used these areas. In any case, what is unclear is whether the changes made to the built environment within MCC are improvements that have helped to maintain TA, preserving the social heritage of the site, or whether it has created a new life on the streets, one that benefits a small sector of society, or which even only exists for the benefit of tourists and other outsiders. Time plays an essential role in the changing use of public spaces and their TA, and this is an area where further research is required

A limitation of our research is that it only focusses on the laws and regulations for the use of the streets (and public spaces) in a particular area in the centre of Mexico City. It does not address fully how the streets are actually used and managed as public spaces within the city as a whole. Further research into the city's planning strategies, policies on urban street use, and the actual use of the street in other districts is needed to confirm our findings that the use of space is affected both by state law and local conventions, changes to which could have an impact on citizens' social obligations (Lara-Hernandez, Melis & Lehmann, 2019).

Future studies on the topic in other cities and multicultural environments are also recommended. Cities are in a constant process of transformation, and the way in which they are designed and re-designed might affect the rational use of public spaces and their TA. A total of 68% of the world population will be living in urban areas by 2050 (United Nations, 2018a), with urban areas seeing a corresponding increase in cultural diversity alongside population growth.

Van Hook (2017) estimates that in the USA the diversity has increased by 98% in urban areas since 1980. These socio-urban changes represent a challenge for urban design and planning. For instance, Pemberton (2016) points out that there is a lack of work about the role of urban planning towards diversity and migration. We have seen that TA has cultural components which may be specific to a specific place or ethnic group. Research is needed to investigate how cities that are more culturally diverse and/or which are facing high levels of national and international migration (such as London, Barcelona or Sydney) address the issue of the use of public space. It would be interesting to see how the forms of TA practiced in each city vary according to the presence of different cultural and religious groups living in the same area, and how this either coexists or comes into conflict with local legislation governing the use of the street.

CHAPTER 7 GENERAL CONCLUSION

This architecture research has demonstrated that TA of the urban landscape is strongly related to the social, political, environmental, cultural, psychological and biological dimensions of the individual and of society as a whole. It has elucidate the nature of TA as a dynamic, complex and multi-scalar urban phenomenon product of other assemblages, such as design of the built environment, cultural landscape and regulatory framework of public spaces. The thesis has illustrated through a systematic review of the literature that TA is crucial to grasp people's sense of attachment to a place, and it contributes to the construction of urban identity (Chapter 2). It has been shown the complementary nature of the relationship between TA and the sustainability of the social landscape in the city (Figure 2-5). In addition, it has suggested TA as an indicator of social sustainability in the urban environment, which is usually omitted and taken as a type of informal practice.

The research has clarified this common misinterpretation by providing a theoretical framework able to conceptualise TA, crystallising it as a concept in its own right (Chapter 3). Furthermore, it has provided a simpler model for the understanding of urban informality which makes it easier to see and understand TA, while some understandings of informal behaviour in urban settings could be better understood when viewed as forms of TA. Moreover, TA as complex and multi-dimensional concept allowed to develop case-specific and case-specific research such as the case of MCC discussed in Chapter 4 and Chapter 5.

This thesis has found that TA could be conceptualised as an assemblage emerging from other assemblages such as culture, legal framework and urban design (chapter Chapter 4), reinforcing the main arguments already illustrated in Chapter 2 and Chapter 3. Thus, it has reinforced assemblage thinking approach as suitable for analysing socio-urban phenomena, supporting theoretical claims of previous authors such as DeLanda (2016), Dovey (2018) and Jessop, Brenner and Jones (2008). Moreover, it has demonstrated that assemblage theory is very resilient because it has been implemented at larger spatial scales and longer temporal scales too. The study findings showed that the diversity of TA as an emergence assemblage intended as an indicator of inclusiveness, is affected indeed by the cultural context, contrasting common assumptions that value the most the high-quality design and visual complexity of the streetscape design. The results of this research support the idea that culture shapes how people experience and live their environments (Hall, 1966). The methods used for this study may be applied to other contexts elsewhere in the world, especially historic city centres. The planning pattern of

MCC makes these findings less generalisable to what Gehl (2011) described as non-human scale cities. Notwithstanding these limitations, these findings suggest a crucial role for TA in promoting inclusivity and social sustainability in the urban landscape. This investigation has raised important questions about the nature of the relationship between the cultural landscape and its implications towards urban design practice.

This research identified elements of the streetscape that support/inhibit the emergence of TA (Chapter Chapter 5). The study demonstrated a strong correlation between streetscape softness and TA, while highlighting that the emergence of new types of TA that challenge formal prescriptions as counter spaces or spaces of resistance. These claims were further supported by findings shown in Chapter 6, illustrating that the full set of activities occurring within the street area is much ampler, including political activity, healthcare practices, and official governmental business. Despite the legal position (also briefly discussed in chapter Chapter 4), the day-to-day use of the street appears to reflect the necessities of the local population, even if they are required to be creative in finding ways to conduct business and practices as usual.

This thesis has shown that TA of the street is crucial for maintaining socio-urban dynamics in the contemporary city as conceptualised in Chapter 3 and Chapter 6. Time plays an essential role in the changing use of public spaces and their TA, and this is an area where further research is required. Within the field of architecture (landscape, urban design and planning), more information on the design features of the built environment related to TA in any determinate context would help us to establish a greater degree of accuracy in this matter. We have seen that TA has cultural components which may be specific to a specific place or ethnic group. Research is needed to investigate how cities that are more culturally diverse engage the issue of the use of public space. It would be interesting to see how the forms of TA practiced in each city vary depending on culturally diverse groups living in the same area, and its implications with local legislation. The findings of this study will be of interest to practitioners, professionals and decision makers dealing with urban design interventions aiming to create more inclusive and lively public spaces in central areas of the city and more specifically in UNESCO world heritage city centres. In addition, it could contribute to the development and improvement of guidelines provided by local and international institutions aiming to a better practice. Lastly, it provides a methodology that allows a quick assessment of the street as public space in terms of inclusion.

Taken together, these findings have provided a framework allowing us to conceptualise and analyse TA in relationship with other dimensions of the urban landscape (e.g. cultural, legal, environmental and design), intertwined with different relevant topics for the urban research agenda such as sustainability, informality, inclusivity, culture and urban design (**Error! Reference source not found.**). The findings from this thesis make several contributions to the current literature. First, it has provided an essential theoretical and empirical framework to study the implications of the transformation of the streetscape design and the urban social landscape by analysing TA at the level of public space. The framework provided here has fostered further research, achieving a deeper understanding of TA and exploring new research frontiers. These studies carried out by me and other authors have not been included in this thesis to avoid a potential fragmentary investigation. For instance, Appendix 1 illustrates the case study presented on September 8th, 2018, in APRU Sustainable Cities and Landscapes Conference, University of Hong Kong, Hong Kong. This case study findings provide further support to previous claims stated in chapter Chapter 2, Chapter 4 and Chapter 5 highlighting the essential role of both the cultural and urban design landscape of the streetscape in regards of TA. Another example presented on November 26th, 2018, in MUH Managing urbanisation for health (15th Conference on urban health) Appendix discusses the relationship between urban mobility and the capability of affiliation that according to Sen (1997) plays a key role for democracy and which exercise requires the TA of healthy public spaces.

Being limited to TA of the street, this research does not provide insights of the phenomenon at larger urban scales. A natural progression of this work would be to focus on TA on different urban scales such as neighbourhoods, districts and cities, and look at the implications of TA in relation to the political or criminal dimension of the city. Further research might explore the relationship between TA and relevant topics such as mental health and well-being in urban areas.

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APPENDICES

This work includes three appendices. Appendix 1 is dedicated to publications and presentations that despite are not included in the main body of the thesis, they constitute a complementary part of the thesis. They are:

Appendix 1a: Lara-Hernandez, J. A., Melis, A., & Lehmann, S. (2018). Temporary appropriation and social sustainability: the case of the historic centre of Mexico City. In *APRU Sustainable Cities and Landscapes 2018*. Hong Kong. Retrieved from <https://apru.org/>

Appendix 1b: Lara-Hernandez, J. A., Melis, A., & Hinojosa-Rebolledo, E. (2018). The relationship between public transport and healthy public spaces: a contribution to democracy. In 15th International Conference on Urban Health. Munyonyo, Uganda: Elsevier B.V.

Appendix 2 includes the front pages of the papers included in the main body of the thesis in their published version. They are:

Appendix 2a: Lara-Hernandez, J. A., & Melis, A. (2018). Understanding the temporary appropriation in relationship to social sustainability. *Sustainable Cities and Society*, 39C, 1–14. <https://doi.org/10.1016/j.scs.2018.03.004>

Appendix 2b: Lara-Hernandez, J. A., Melis, A., & Lehmann, S. (2019). Temporary appropriation of public space as an emergence assemblage for the future urban landscape: The case of Mexico City. *Future Cities and Environment*, 5(1), 1–22. <https://doi.org/10.5334/fce.53>

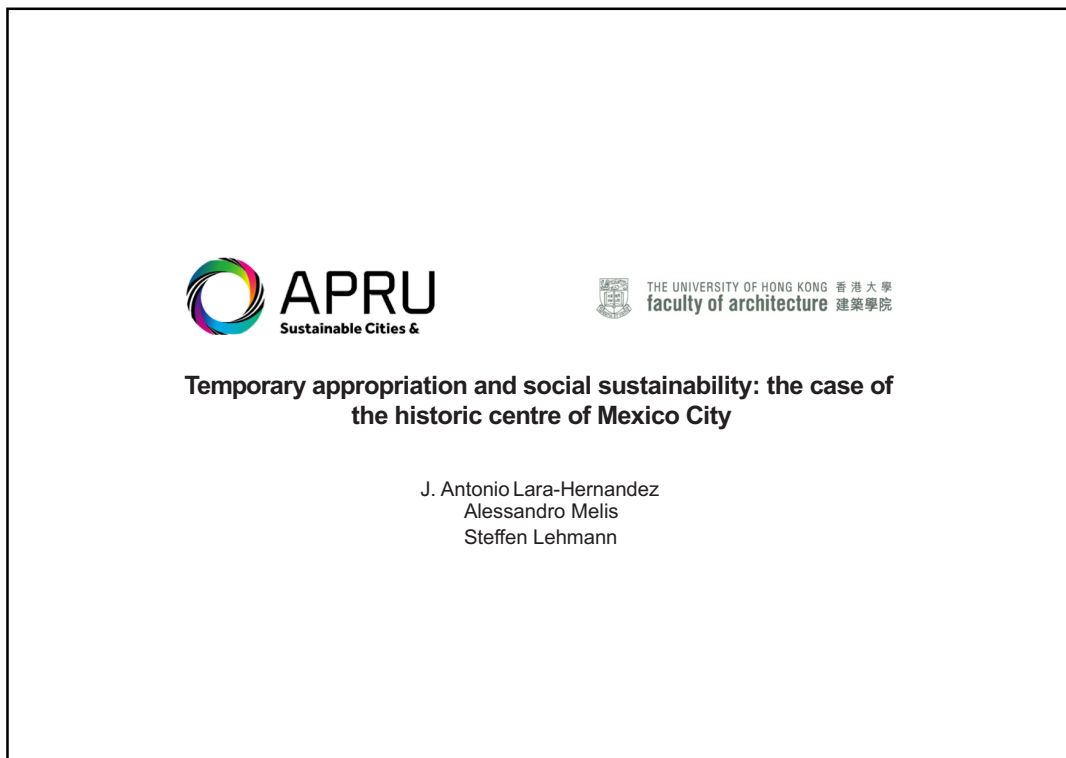
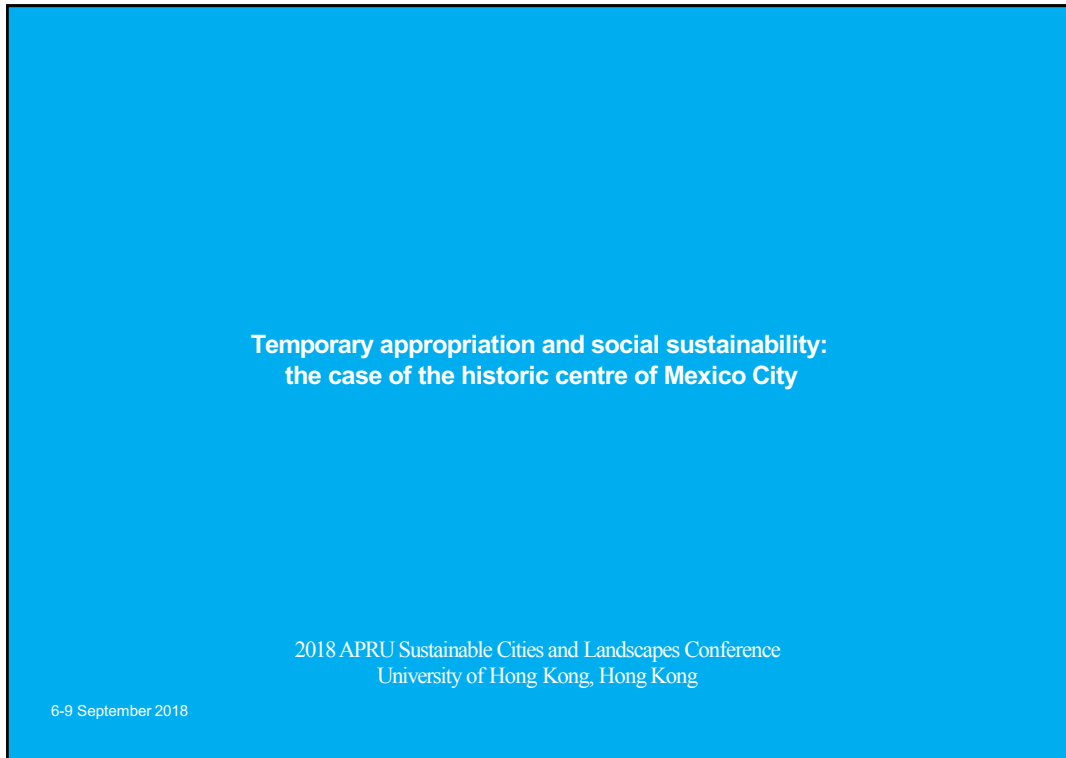
Appendix 3 includes extracts of published works (2016-2019) that although not referring to the thesis research have been essential to improve my research methodology skills. They come as follows:

Appendix 3a: Melis, A., & Lara-Hernandez, J. A. (2018). Fonte Mazzola Cultural Park by Heliopolis 21. In *CARU Annual Conference*. Oxford, UK. Retrieved from <http://www.ca-ru.org/>

Appendix 3b: Melis, A., Lemes, F., Lara-Hernandez, J. A., & Repetto, D. (2018). The return to nature in the radical thinking. *Journal of New Frontiers in Spatial Concepts*, 10, 23–27. Retrieved from <http://ejournal.uvka.de/spatialconcepts/archives/>

Appendix 3c: Aimar, F., Boarin, P., Melis, A., & Lara-Hernandez, J. A. (2017). Energy galleries: A sustainable opportunity for future cities. In T. Auer, A. Melis, & F. Aimar (Eds.), *Disruptive Technologies: The integration of advanced technology in architecture teaching and radical projects for the future city* (pp. 20–32). Wolters Kluwer Italia S.r.l.

Appendix 1a: Slide's presentation of the case study shown in the conference APRU 2018 in Hong Kong



CONTEXT

CONTEXT/MEXICO CITY CENTRE

Mexico City Centre

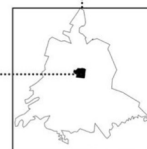
-UNESCO protects
in Latin-America **18** city centres

-Oldest (1325) **695** years

-Largest **9.2** km²



Mexico



Mexico City
size comparison



Portsmouth

Source: <https://whc.unesco.org/en/lac/>

CONTEXT/MEXICO CITY CENTRE

Mexico City Centre

- UNESCO protects in Latin-America **18** city centres
- Oldest (1325) **695** years
- Largest **9.2** km²
- 2007 - 2014
- Investment **£232.2** million
- Public space improved **82,579** m²
- Streets were transformed **10.3** L/km



Source: <https://whc.unesco.org/en/lac/>

CONTEXT/MEXICO CITY CENTRE

Mexico City Centre



Moneda St.



Madero St.



Regina St.



Talavera St.

CONTEXT/MEXICO CITY CENTRE

Consequences

-Scholars (Delgadillo 2014, Ramirez Kuri 2008, Saravi 2008) claim that

urban life has been disrupted

-Authors (Ramirez Kuri 2015; Oehmichen 2010; Diaz Parra 2014) claim that is **less plural and inclusive**



RESEARCH BACKGROUND

DEFINITION

Temporary Appropriation (TA) as the act in which people use public spaces to carry out individual or collective activities other than the purpose that space was originally designed for (Fonseca Rodriguez, 2015).

RESEARCH BACKGROUND/PUBLIC SPACE

- 1960s
- Jacobs, 1960
- Harvey, 1973
- Mitchell, 2003
- Sennett, 2006
- Gehl, 2011



Public Space



RESEARCH BACKGROUND/CONCEPTUALISATION

Appropriation

Korosec-Serfaty, 1976

A temporary phenomenon with a dynamic process of interaction between the individual and its surroundings.

Graumann, 1976

It is a process similar to the process of humanisation which is basically the societal defined meanings interiorised by the individual.

Yory, 2011

The act of co-appropriation generated between the man and the world; through which the world becomes the world, at the opening realised by the man within its historic-spatial nature and human becomes human through its spatialisation.

Fonseca-Rodriguez, 2015

The temporary act in which people use public spaces to carry out individual or collective activities other than the purpose that the space was originally designed for.

RESEARCH BACKGROUND/CONCEPTUALISATION



Woman cooking in the street in Mexico City Centre



Men watching futbol match in Palermo city centre



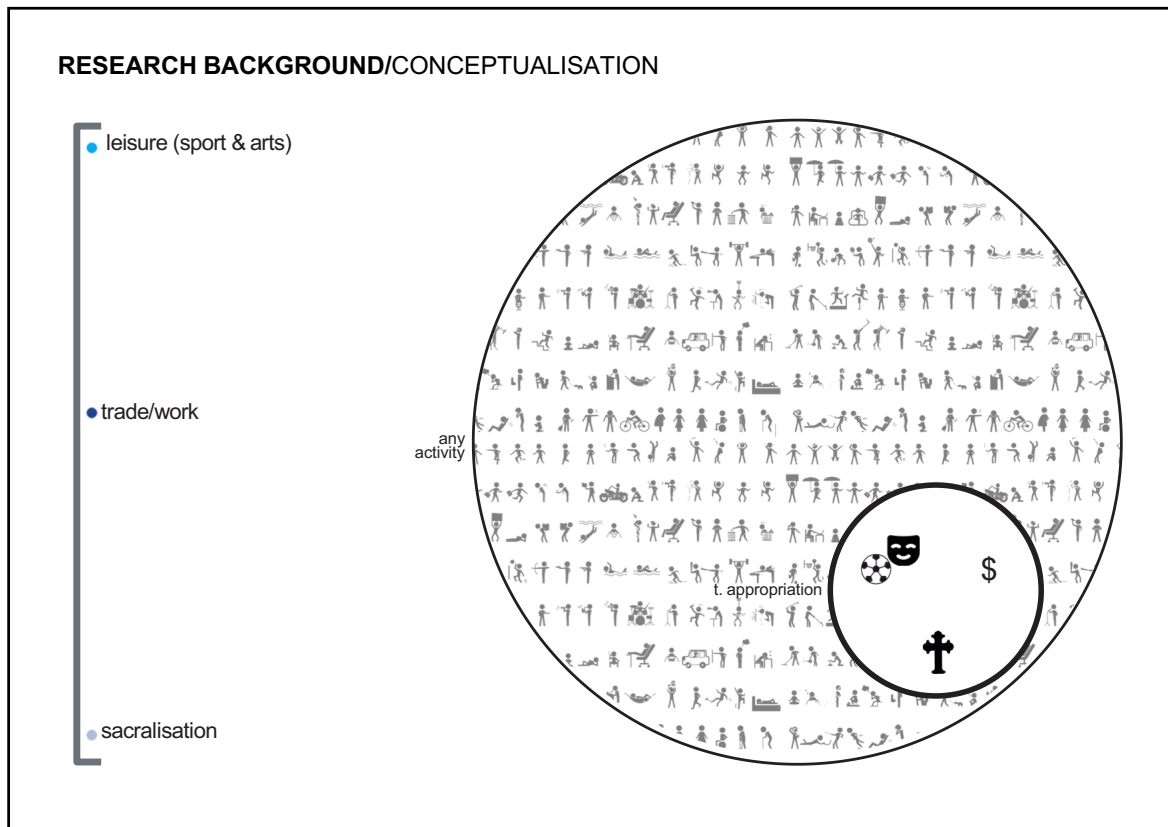
Altar in the street in Mexico City Centre



Protest in the street because of missing students



Bowling shoes in Mexico City Centre



RESEARCH BACKGROUND/CONCEPTUALISATION

Relevance

Graumann, 1976
The appropriation of the public space is a medium and a goal in order to overcome human alienation.

Lefebvre, 1992
The appropriation is what gives citizens the right to fully use and manage their everyday life within the urban environment.

Purcell, 2002
The appropriation allows citizens to produce urban space rather than just to use the already produced urban space.

de la Torre, 2015; Pol & Iñiguez, 1996; Pol Urrútia, 2002; Vidal Moranta & Pol Urrútia, 2005
The appropriation plays a key role to conform the urban identity through individual and collective activities in the urban environment.

RESEARCH BACKGROUND/PREVIOUS STUDIES

Jacobs, 1960
Street as public space.

Whyte, 1980
The use of the squares in New York.

Appleyard, 1981
The use of the street in relationship traffic flow.

Moudon, 1991
The street as quintessential public space.

Rapoport, 2005
The relationship between design and people's behaviour.

Mahdzar, 2008
Street accessibility and sociability.

RESEARCH BACKGROUND/PREVIOUS STUDIES

temporary appropriation

Ramirez-Lovering, 2008
Temporal occupation of temporary markets in public spaces & illegal occupation of territories in the fringe of the city in Guadalajara.

Salazar-Trujillo, 2010
Permanence and position of users in public spaces in Colombia.

Noschis et al., 1978
The relationship between the design of the built environment and the temporary appropriation in Burano.

Gutierrez de Velasco Romo and Padilla-Lozano, 2012
The relationship between diversity of users and the activities occurring in squares in Aguascalientes.

Hernandez-Bonilla and Gomez-Gomez, 2015
The appropriation of streets of after urban regeneration process in central areas in Xalapa.

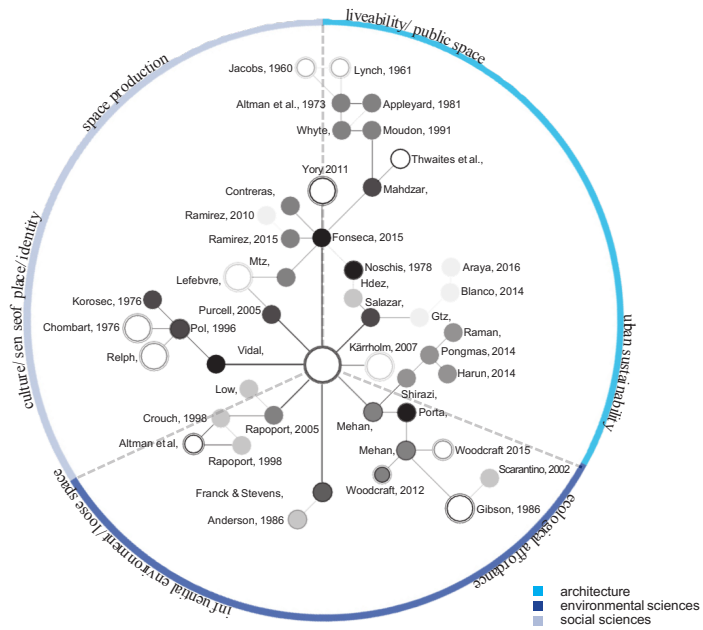
RESEARCH BACKGROUND/CONCEPTUALISATION

-It contributes to the edifice of the social urban landscape, which is embedded in the second aspect of the right to the city.

-It plays a key role to conform the urban identity of a place.

-TA relies on both the design of the built environment and the meanings and implicated relationships (people's values, behaviours and actions) of the social life in the city.

-It is an individual, social, and spatial need that cannot be underestimated when it comes to urban studies.



Source: Lara-Hernandez and Melis, 2017

RESEARCH METHODOLOGY

RESEARCH/METHODOLOGY/METHODS

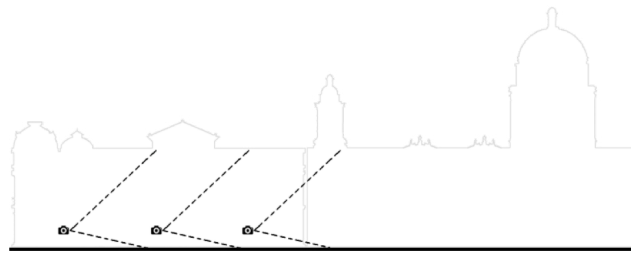
streetscape design analysis

- Visual complexity
- colour histogram
- pavement
- street furniture
- facade

(Porta and Renne, 2005; Mahdzar, 2008)

TA mapping

- Participant overt observation
- (Francis, 1984; Groat and Wang, 2002)



RESEARCH/METHODOLOGY/METHODS

visual complexity

- Visual complexity
- colour histogram
- pavement
- street furniture
- facade

(Porta and Renne, 2005; Mahdzar, 2008)

TA mapping

- Participant overt observation
- (Francis, 1984; Groat and Wang, 2002)



colour histogram

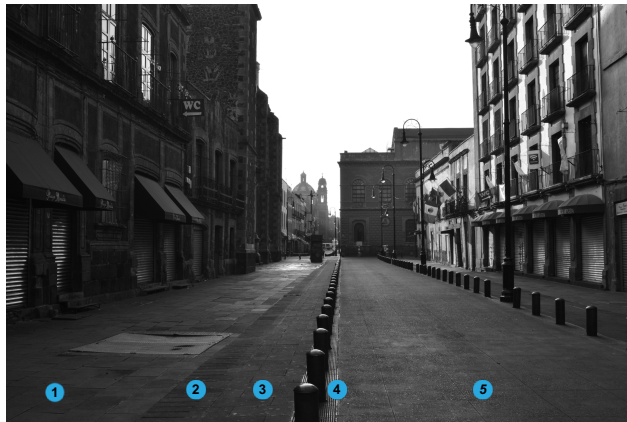
RESEARCH/METHODOLOGY/METHODS

- Visual complexity
 - colour histogram
 - pavement
 - street furniture
 - facade
- (Porta and Renne, 2005; Mahdzar, 2008)

TA mapping

- Participant overt observation
- (Francis, 1984; Groat and Wang, 2002)

visual complexity



pavement

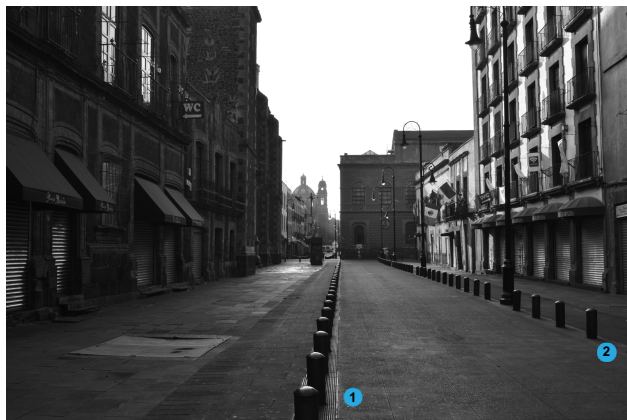
RESEARCH/METHODOLOGY/METHODS

- Visual complexity
 - colour histogram
 - pavement
 - street furniture
 - facade
- (Porta and Renne, 2005; Mahdzar, 2008)

TA mapping

- Participant overt observation
- (Francis, 1984; Groat and Wang, 2002)

visual complexity



street furniture

RESEARCH/METHODOLOGY/METHODS

- Visual complexity
- colour histogram
- pavement
- street furniture
- facade

(Porta and Renne, 2005; Mahdzar, 2008)

TA mapping

- Participant overt observation
- (Francis, 1984; Groat and Wang, 2002)

visual complexity



façade

RESEARCH/METHODOLOGY/METHODS

streetscape design analysis

- Visual complexity
- colour histogram
- pavement
- street furniture
- facade

(Porta and Renne, 2005; Mahdzar, 2008)

TA mapping

- Participant overt observation
- (Francis, 1984; Groat and Wang, 2002)

Activities in which people temporarily appropriate the public space						
Category	Economy	Leisure	Sacralisation			
Description	Any activity in which a person or group use the public space in order to obtain an economic benefit directly or indirectly.	Any activity in which a person or a group use the public space for leisure purposes.	Any activity in which a person or a group use the public space for religious purposes.			
Sub-category	Work	Trade	Sports-games	Artistic expressions	Rest	Processions, praying, lighting candles and putting flowers.
Individual or collective	Advertising or promoting services, waiting, engaging or handicraft, attracting possible clients.	Selling or buying products (food, waiting, engaging or handicraft, clothes, etc.)	Skateboarding, soccer, cards, marbles, hopscotch.	Playing music, dancing, painting, acrobatics, reciting and singing.	Eating, resting	

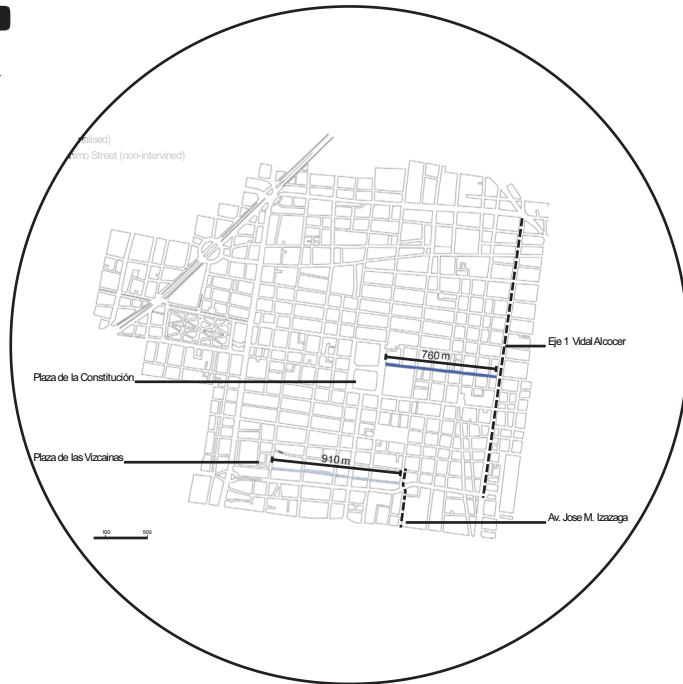
Observation analysis			
Days of observation	Time of observation	Observation technique	Diversity analysis
Monday and Sunday	1.7:00 - 9:00 am. The first period of observation is selected according to the "rush hour" in the MCC. Offices, shops and schools usually start their operation at this time of the day. 2. From 2:00 - 4:00 pm: The second period will be the lunch. Many people use to take a break to go out and have lunch, therefore the chances of observe diversity of activities in public spaces are higher. 3. From 6:00 - 8:00 pm: The third period is when the majority of the people end their activities.	A three round observation of two-hour period will be carried out each day. Each two hours consist of 2 rounds of 15 minutes walk (to and from, totalising 30 minutes in each hour); i.e., 4 rounds per 2 hour slot. These rounds of observation are conducted in 6 snap shots @ two 15 minutes walk snap-shots per hour per area in a one day observation.	The diversity of temporary appropriations is calculated using the Shannon-Weiner diversity index which the formula comes as follows $H' = -\sum p_i \ln p_i$ in which $p_i = 1/S$ (S=total number of elements). Meaning that the higher the value of diversity index, the higher level of temporary appropriations. After calculating the diversity value of each street, the results can be compared and show which of the analysed streets have the higher value and therefore higher temporary appropriation.



RESEARCH/METHODOLOGY/SAMPLE SELECTION CRITERIA

Comparative analysis

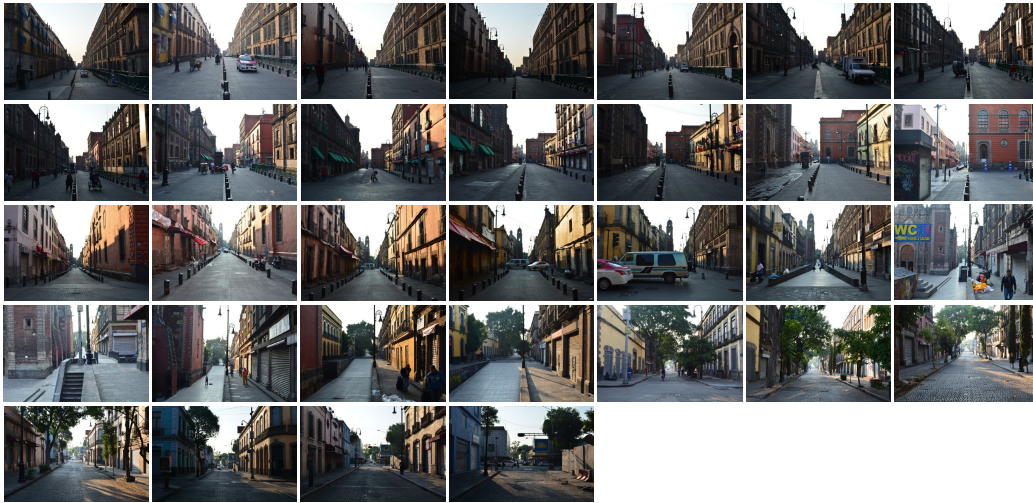
	CS1 Moneda St.	CS2 S. Jeronimo St.
same urban system	✓	✓
population number	✓	✓
mix use buildings	✓	✓
link square/main st.	✓	✓
pedestrian only section	✓	✓



RESULTS

RESULTS/STREETSCAPE ANALYSIS

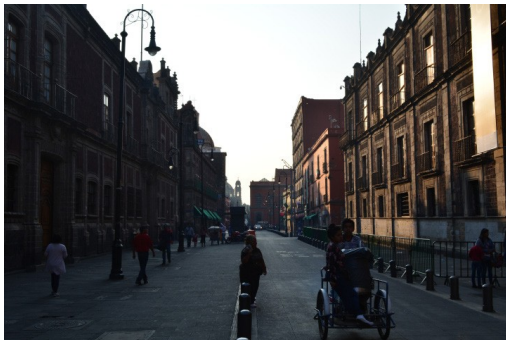
Moneda St.



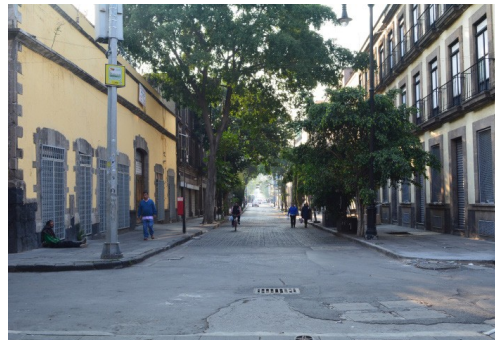
RESULTS/STREETSCAPE ANALYSIS/EXAMPLE

Moneda St.

Colour sub-indicator



5



1

RESULTS/STREETSCAPE ANALYSIS/EXAMPLE

Moneda St.

Façade sub-indicator



5



1

RESULTS/STREETSCAPE ANALYSIS/EXAMPLE

Moneda St.

Street furniture sub-indicator



5

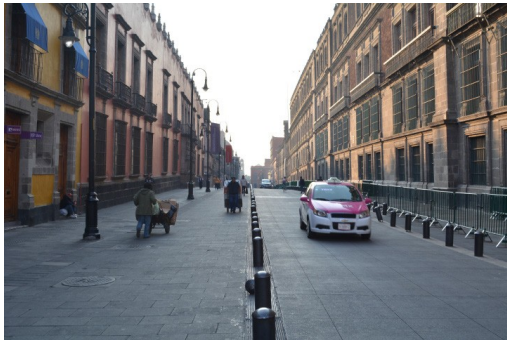


1

RESULTS/STREETSCAPE ANALYSIS/EXAMPLE

Moneda St.

Street pavement sub-indicator



5



1

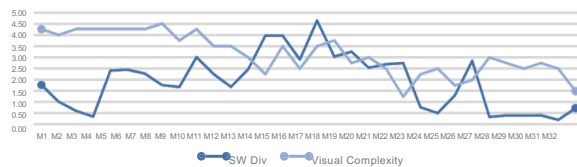
RESULTS/STREETSCAPE & TAANALYSIS

Moneda St.

Street section	SW Div	Visual complexity	Street section	SW Div	Visual complexity
M1	1.78	4.25	M17	4.63	3.50
M2	1.02	4.00	M18	3.04	3.75
M3	0.62	4.25	M19	3.25	2.75
M4	0.36	4.25	M20	2.54	3.00
M5	2.41	4.25	M21	2.70	2.50
M6	2.45	4.25	M22	2.74	1.25
M7	2.28	4.25	M23	0.77	2.25
M8	1.77	4.50	M24	0.52	2.50
M9	1.68	3.75	M25	1.31	1.75
M10	3.01	4.25	M26	2.85	2.00
M11	2.25	3.50	M27	0.35	3.00
M12	1.69	3.50	M28	0.42	2.75
M13	2.47	3.00	M29	0.41	2.50
M14	3.97	2.25	M30	0.42	2.75
M15	3.96	3.50	M31	0.22	2.50
M16	2.90	2.50	M32	0.74	1.50

SW TAAVERAGE	1.92
VC AVERAGE	3.14

TAAVERAGE / MAX TA	3.22
VC AVERAGE / MAX TA	2.80



RESULTS/STREETScape ANALYSIS

San Jeronimo St.



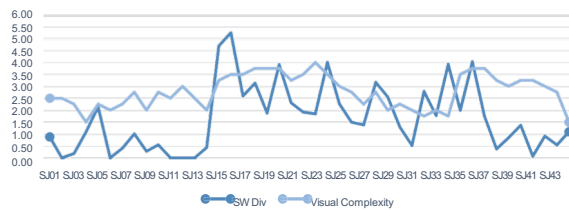
RESULTS/STREETScape & TA ANALYSIS

San Jeronimo St.

Street section	SW Div	Visual complexity	Street section	SW Div	Visual complexity
SJ1	-0.88	2.50	SJ23	-1.85	4.00
SJ2	0.00	2.50	SJ24	-4.00	3.50
SJ3	-0.18	2.25	SJ25	-2.26	3.00
SJ4	-1.09	1.50	SJ26	-1.49	2.75
SJ5	-2.14	2.25	SJ27	-1.38	2.25
SJ6	0.00	2.00	SJ28	-3.17	2.75
SJ7	-0.40	2.25	SJ29	-2.55	2.00
SJ8	-1.01	2.75	SJ30	-1.29	2.25
SJ9	-0.28	2.00	SJ31	-0.52	2.00
SJ10	-0.55	2.75	SJ32	-2.78	1.75
SJ11	0.00	2.50	SJ33	-1.78	2.00
SJ12	0.00	3.00	SJ34	-3.92	1.75
SJ13	0.00	2.50	SJ35	-2.00	3.50
SJ14	-0.44	2.00	SJ36	-4.03	3.75
SJ15	-4.69	3.25	SJ37	-1.74	3.75
SJ16	-5.25	3.50	SJ38	-0.38	3.25
SJ17	-2.59	3.50	SJ39	-0.85	3.00
SJ18	-3.13	3.75	SJ40	-1.37	3.25
SJ19	-1.88	3.75	SJ41	-0.07	3.25
SJ20	-3.91	3.75	SJ42	-0.91	3.00
SJ21	-2.31	3.25	SJ43	-0.55	2.75
SJ22	-1.92	3.50	SJ44	-1.10	1.50

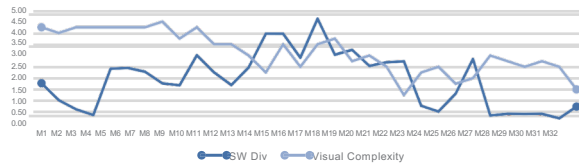
SW TAAVERAGE	1.65
VC AVERAGE	2.77

TAAVERAGE / MAX TA	2.63
VC AVERAGE / MAX VC	3.01



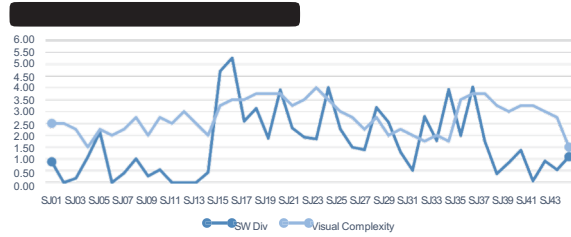
RESULTS/STREETSCAPE & TA ANALYSIS

Moneda St.



SW TAAVERAGE	1.92	max 4.63 min 0.36
VC AVERAGE	3.14	max 4.50 min 1.25

TAAVERAGE / MAX TA	3.22	max 4.63 min 2.54
VC AVERAGE / MAX TA	2.80	max 3.75 min 1.25



SW TAAVERAGE	1.65	max 5.25 min 0.00
VC AVERAGE	2.77	max 4.00 min 1.50

TAAVERAGE / MAX TA	2.63	max 5.25 min 0.52
VC AVERAGE / MAX TA	3.01	max 4.00 min 1.75

TA SW div

Square



Avenue

CONCLUSION

CONCLUSION

[REDACTED]

Urban design

-There is a proportional relationship between the values of the VC indicators and TA. Higher values of TA diversity are not necessarily correlated to higher values of VC.

-There is more diversity of TA in areas where the physical appealing of the built environment is neither the higher or lower, it is rather somewhere in the middle.

Urban planning

-The higher values of TA SW Div are in the central areas of the street as a whole, meaning that the closer to the square or the avenue the less TA diversity there is.

-Proximity to a more versatile public space (square) allows more diverse activities to occur, reducing the TA SW Div in the vicinity, while in the case of the avenue it seems that the proximity to heavy car traffic flow discourages TA.

RESEARCH/PUBLICATIONS

[REDACTED]
Manuscripts and conferences

Published papers

Lara-Hernandez, A. J. and Melis, A. (2018) 'Understanding the temporary appropriation in relationship to social sustainability', Sustainable Cities and Societies. Elsevier B.V., 39C(November 2017), pp. 1–14. doi: 10.1016/j.scs.2018.03.004.

Lara-Hernandez, J.A., Melis, A. and Caputo, S. (2017) 'Understanding Spatial Configuration and Temporary Appropriation of the Street in Latin American cities: the case of Mexico City Centre', Advances in Science, Technology & Innovation. Edited by V. Scavone et al. Palermo, Italy: Springer, pp. 153–173.

Submitted papers

Lara-Hernandez, J.A., Melis, A. and Lehmann, S. (2017) 'Temporary appropriation vs regulations of the streets in Mexico City Centre', Journal of Public Space, (Mcc).

Lara-Hernandez, J.A., Melis, A. and Hinojosa-Rebolledo, E. (2018) 'The relationship between public transport and healthy public spaces: a contribution to democracy', in 15th International Conference on Urban Health. Muryonyo, Uganda: Elsevier B.V.

Lara-Hernandez, J.A., Melis, A. and Lemes, F. (2018) 'The temporary appropriation of urban green spaces: a contribution to urban health', in 15th International Conference on Urban Health. Muryonyo, Uganda: Elsevier B.V.

Publications in course

Di Raimo, A., Melis, A. and Lehmann, S. (2019) 'Informality Now – Looking at informal settlements through the lenses of sustainability', Routledge.

Melis, A., Lara-Hernandez, J.A. and Thompson, J. (2019) 'Temporary appropriation of the city: a contribution to urban sustainability', Springer.

Appendix 1b: The relationship between public transport and mental health: an initial study

Introduction

Since the second half of the past century the urban areas around the globe have been under constant and unstoppable development with no precedents before. Although in contemporary times the urban development is usually associated with economic growth and therefore the improving of well-being population, negative effects of rapid urbanisation have been documented as well, such as the increase of informal settlements lacking basic facilities and utilities (UN-Habitat, 2009), and the growth of pollution (Jackson & Kochtitzky, 2010), crime rates, and gentrification processes (Smith, 1982). The health effects of urban growth have also been widely demonstrated. However, most of the scholars focused mainly on the incidence of cancer, lung diseases and cardiovascular disorders, related to pollution and behavioural habits that have established themselves in the urban environment. The present study instead focuses on psychiatric disorders such as depression. This is obviously an interdisciplinary research that is dealt with in this paper from a spatial planning (and not medical) perspective. The relevance of the study is due to the fact that, in 2050, is expected that 68% of the population will live in urban areas (United Nations, 2018a), whilst the consequences on population health are mostly unknown in such scenario.. Urban development intrinsically involves urban design, planning and architecture, which are disciplines that shape the built environment. The way in which specific elements of the built environment are designed such as building's blocks, streets and open spaces have profound consequences in people's health. Furthermore, the way in which the citizens move through this man-made habitat have strong repercussions in both, physical and mental health. Despite that the built environment has strong effects on health, the research to date has been more focussed in the relationship between environmental conditions and health. Hence, one of the main objectives of the present research is to illustrate how urban public transport's condition, theoretically understood as an extension of the public spaces, can have a positive effect regarding population's mental health. Taking into consideration the relevance of the study and its transdisciplinary description, in order to address the research aim the present text utilises a capability approach which focusses in the individual freedoms rather than utilities. To do so, firstly it describes the theory of capabilities developed by Sen (1999): secondly, it conceptualises the public transport as an extension of the public spaces and lastly, it describes the implications of the relationship between urban design and mental health.

A main objective of the investigation is to describe the relationship between public transport development and mental health. Thus, the present writing is to explore within the urban context the impact of changes in the operating conditions of public transportation towards public mental health. The Metrobus and Macrobus (rapid bus transport) in Mexico City and Guadalajara respectively were selected as a case study in Mexico. Official data from secondary sources, including mental health indicators of the selected case studies were analysed during the period 2012-2016 in which the public transport system was implemented and developed. Lastly, the paper argues that the improvement of people's capability of freedoms by the improvement of public transport plays a key role towards public's mental health. The following section describes the capability approach in relation to development.

Theory of capabilities and development

Cities are a human product and probably the most interesting artefact ever created. Cities of today are constantly developing in all of their dimensions such as social, political, economic and environmental. The Oxford Dictionary (2018) defines development as 1) the process of developing or being developed, 2) a specified state of growth or advancement, and 3) a new and advanced product or idea. The notion of advance is implicit in all of them and how to assess development has been one the main concern of every government. Some views include the identification of the gross national product, the rise of personal incomes, or industrialisation or technological advance, or even social modernisation, which are mainly based on the virtue of justice. One of the advocates of this view is Rawls (1999), who describes justice as the first virtue of social institutions similar to the truth for systems of thoughts. It assumes fixed ideas such as 1) society is a cooperative venture of mutual advantage marked by both conflict and identity of interest. The latter because social cooperation enables to have a better life for all of us, because no one would have achieved by their own effort. The former because people are not detached from the benefits are produced or distributed and they pursue a share of the benefits. The level of justice and democracy of any social scheme depends mainly on the economic opportunities and social conditions of the sectors of society and how fundamental rights and duties are assigned to each of them. Thus, in order to rise the aforementioned levels could be possible when the economic and social benefits become affordable to everyone in the first place. However, he stated that the principles explained by him may be irrelevant for the informal conventions and customs of everyday life. In addition Rawls added "I shall be satisfied if it is possible to formulate a reasonable conception of justice for the basic structure of society conceived for the time being as a closed system isolated from other societies" (1999;p.7).

Currently, in our highly digitally connected and globalised society it would be very hard to achieve.

Sen (1999) criticises Rawls theory of justice by arguing that it doesn't take into account substantive individual freedoms, referring to the individual capabilities to do things that a person has a reason to value. Sen defines development as "a process of expanding the real freedoms that people enjoy"(1999:p.3) or individual freedoms in other words. As a social product, individual freedoms operates in a two way relationship between 1) social arrangements to extend individual freedom and 2) the use of individual freedom to both, improving the respecting lives and making social arrangements more appropriate and effective (Sen, 1999:p.31). A key premise of the individual freedoms is a citizen's participation, which consolidate it as an instrument to achieve freedoms. Sen (1999) describes five types of instrumental freedoms 1) political freedom also known as civil rights, refers to the possibility of people to choose whose governing and under which principles; 2) economic facilities which refer to the opportunities for individuals to use economic resources in order to consume, produce or exchange. The expansion of individual freedoms into a 'national institution' was one of the key components of the growth of citizenship (Marston & Mitchell, 2004). For instance, the availability to access finance; 3) social opportunities which refer to the arrangements that society makes focusing on education, health and so on. It improves individual's freedom to live better; 4) transparency guarantees which refers to the level and presumption of trust in which society operates. When this trust is violated by the lack of openness lives of many people could be affected; and 5) protective security which is needed in order to provide social safety. Sen (1999) argues that in order to consciously execute the instrumental freedoms, it requires basic educational skills and knowledge and when the latter is denied it is contrary to the basic conditions of participatory freedom. However, in order to participate in the public arena, the citizens must have, first the spaces which allow such practices, and second, the capability to access and the means to reach them. In the past of the current richest countries is possible to see that they had an exceptional long-time trajectory of public action addressing issues such as public education, health care, land reforms and communication routes (roads) (Sen, 1999). Hence the majority of the population could directly participate in the process of economic expansion thanks to these social opportunities. It is also of utmost importance the material and moral features of the means people use to reach public spaces, since such means are indeed extensions of public spaces; therefore, its quality and capability to safeguard citizen's dignity is core to achieve a social environment that allows a correct appropriation of the public spaces so that public spaces can become arenas of real democratic social

interaction. Therefore, the features of the means to access public spaces, such as public transport and urban infrastructure, reach the level of a key condition to achieve healthy democracies, since such features must allow citizen's dignity to endure so that they can fully express their interests and preoccupations once they interact in public spaces.

Having established the theoretical link between the capabilities of freedom and development in the urban landscape, we will conceptualise the role of public space in the following section which describes its relevance and contribution to the democratic arena.

The multi-dimension nature of public spaces

The world we are now living is a place in which more than the 90% of the land surface has been modified to some extent by any human activity (Forman, 1995). According to the United Nations (2018a), by 2050 the 68% of the world's population will be living in cities which is the best human artefact ever created (Mumford, 1938). Forman (1995) claims that spatial structure and landscape design is highly relevant to achieve human needs rather than just biodiversity or environmental sustainability. In such scenario the design of our cities and the configuration of the built environment and especially public spaces play a decisive role.

An extensive literature theoretically describes the concept of public space and its relevance for citizen's realm. The public space could be defined as the urban space that belongs to the public for the common good such as plazas, squares, streets and parks. Public spaces are best for interaction and socialisation with others (Vidler, 2001). It could be conceptualised as the physical arena where the cultural, economic, political, social and environmental dimensions of individuals and society unfolds in the city. These different dimensions have been widely and continuously studied by researchers such as Low (2000, 1996, 2005) and Groth (2005) exploring the cultural micro geographies, Mehta (2011) describing the relationship between small business and the street, Mouffe (2007, 2000, 2014) theorising the politics of public spaces, Jacobs (1961), Choay (2001b) and Lara-Hernandez & Melis (Lara-Hernandez & Melis, 2018) describing the social dimension, and XXX describing its environmental dimension. These dimensions are in constant flux interacting with each other in what Carmona (2014) described as *place-shaping continuum* which refers to life-cycle of public spaces in cities. The place-shaping continuum is integrated by three main elements first, contextual factors (history, traditions and policy), second place-shaping process (design, development, space in use and management) and lastly, a set of power relationships between stakeholders. Varna (2014) and Atkinson (2003) indirectly support the argument by stating that the concept of public space is a highly controversial topic analysed

by different approaches from diverse fields of study. Thus, the study of public spaces is multi-dimensional and it could be conceptualised through a diverse multidisciplinary approaches. However, the main objective of this manuscript is not to fully discuss the multi-dimensional complexity of the public space, which certainly has been argued elsewhere (Sampson & Raudenbush, 1999; Marston & Mitchell, 2004; Pennay, Manton & Savic, 2014; Low, 1996, 2006; Jones & Ward, 2004; Francis *et al.*, 2012). Rather, this paper is focused in two of the dimensions of the public arena in which public spaces play a key role which are citizenship and health.

Having described the multi-dimension nature of the public space, it is now necessary to focus on its particular dimension related to the concept of citizenship.

Public space and citizenship

The Oxford Dictionary defines citizenship as the position or status of being a citizen of a particular country. A more extended definition is provided by Thomas H. Marshall (1964), who defines citizenship as 'a status bestowed on those who are full members of a community. All who possess the status are equal with respect to the rights and duties with which the status is endowed' (Marshall quoted in Friedmann, 2002, p. 168).

Through centuries the traditional notion of citizenship based and derived from the concept of nation was crucial for the formation of the concept of identity. The advance of the concept of citizenship was fostered by the expansion of individual freedoms into a “national-institution” (Marston & Mitchell, 2004). However, due to the social, political, economic, and cultural reconfiguration in the globe today it is inadequate to restrict membership in a society framed by the notion of nation-state. The influence and the scale of institutions in conjunction with the spaces of citizenship are constantly changing. We agree with Yuval-Davis (1999), when she claims that the understanding of such process should be addressed through multi-layered concepts. The concept of citizenship has been expanded and now is encompassing human rights, cultural claims and unquestionably the rights to the city (Irazábal, 2008; Mitchell, 2003). Winocur (2003) offers different views of the concept that are still applicable today, helping us to elucidate the latter. First, the notion of citizenship becomes wider in terms of inclusion understood as a constant dynamic. For instance, it includes the right to be different from the majority and dominant national community. Secondly, the notion of citizenship is undeniably linked to the rights of minority groups to healthy public spaces, leading to continuous negotiations over the access, control and management of such spaces. Lastly, the impact of the communication media in regard of the participation in public arena leading to the construction of

values and public opinion, sense of belonging and finally the use and appropriation of public spaces. For instance, the use of Twitter as the communication exchange platform was crucial during the Arab spring in 2010, or the March for Our Lives in which thousands of people joined anti-gun protests around the world earlier this year. On the one hand, citizenship could foster disruptive effects of class conflict through its relief of material concerns, while on the other, and more important, through its extensively spread ideology of individual's right to a share in the social heritage and to live the life of a civilized being according to the standards prevailing in the society (Fraser, 1997; Gordon, 1997: 92; see also Hindess, 1993: 20; Turner, 1993). Thus, if the access or the means for accessing public spaces are not provided consequently, democratic citizen participation in the public arena could be compromised.

Irazabal (2008) points out how the availability of transport can significantly hamper the practice of citizenship and democracy. Authors (Zukin, 1987; Graham & Aurigi, 1997; Avritzer, 2002) have argued that in order to maintain democracy in cities the role of public spaces are crucial. McBride (2005, p. 1002) supports this argument stating that “When we lose public space, we lose democracy”. Following statements by Sen (1999), we could argue that diminishing the capability of citizens to arrive to public spaces with their dignity undamaged by the conditions of the means used to arrive to them would compromise one of the fundamental characteristic of public spaces that make them so important for democracies. If citizens arrive to such spaces with no aim to express themselves fully and independently, public spaces lose their core features in regard to keeping democracies healthy. Authors such as Low (2000) and Mouffe (2007) consider that the access to public spaces where people can exercise freedom of speech and aggregation to a diverse social groups sharing interest is a precondition for democracy.

In summary, it has been shown from this review that public spaces are the physical arena for social engagement and contestation in the city. These plurality of contestation is a component that conforms the notion of citizenship, which is fostered by the emancipation of individual freedoms, and thereby is an expression of democracy. Safeguarding the capability of citizens to arrive to public spaces should include safeguarding the dignity of the citizens that use them, so that once in the public space citizens are able to express themselves fully.

Public space and health

In the 60s Jacobs (1961) stated that the streets are the basic element of public spaces in cities. Furthermore, she claimed that the presence of people on the streets were a good symptom of

city urban health. Thwaites, Helleur and Simkins (2005) support the previous argument by stating that the configuration of the environment has the capacity to benefit human health and wellbeing. The latter is not new, about 500 BC the Greeks had the *asklepeia*, which was a space for patients to recover by facing an enclosed garden. Later on, the Romans had the *valetudinarium* a place for recovering soldiers that included a central courtyard (Westphal, 2000). Recently, researchers in the field of environmental psychology such as Kaplan (1989) and Kim and Kaplan (2004) have demonstrated the restorative potential effects of public spaces. For instance, research has shown that people have better mental health when they are able to control their surroundings because it prevent the feeling of helplessness⁶ (Scheier & Carver, 1987; Taylor & Brown, 1988).

The restorative effects on mental and physical health of green areas have been clearly established (Kaplan & Kaplan, 1989; Evans, 2003; Ulrich, 1979). The availability of green spaces in the city benefits the most to lower socioeconomic groups, especially the youth and elderly population (Maas *et al.*, 2006). The possibility to access to public spaces, encourages physical activity among the population. Physical inactivity is a major risk factor associated with non-communicable diseases such as type 2 diabetes (Jeon *et al.*, 2007), breast and colon cancer (Friedenreich, 2010) and coronary heart disease (Sattelmair *et al.*, 2011). Physical inactivity was estimated to be responsible for 5.3 million premature deaths worldwide in 2008 (Lee *et al.*, 2012, 2013). The increase of physical activity could eliminate between 6% and 10% of the incidence of the aforementioned major non-communicable diseases, and increase life expectancy (Lee *et al.*, 2012). Moreover, it could eliminate between 6% and 10% of the incidence of the aforementioned major non-communicable diseases, and increase life expectancy (Lee *et al.*, 2012). As a consequence, the promotion of an active lifestyle has become an important concern in terms of public health. The World Health Organization (2013) has targeted a 10% reduction in the prevalence of physical inactivity in its 2013-2020 plan. In addition, TA of public spaces could have a positive impact on public health since it promotes outdoor activities (Lara-Hernandez, Melis & Lehmann, 2019).

⁶ Helplessness is operationalized by exposing subjects to an uncontrollable stimulus (e.g., noise) while performing a task and then presenting them with opportunities to avoid a noxious stimulus by performance on either the same or a different task.

With respect to mental health there is a strong link with both, public spaces and the concept of community. Let us now turn to discuss this triad.

Public space, community and mental health

A vast literature supports the relevance of public spaces for the conformation of community (French *et al.*, 2013; Wilkerson *et al.*, 2012; Riger & Lavrakas, 1981; Rogers & Sukolratanamete, 2009). According to Gusfield (1975:p.xvi), there are two major uses which defines the term community. The first one is referred to geographical notion, i.e. neighbourhood, town, province, country. The second is relational which, is concerned for the quality of character of the relationship between people. For instance, family members have a strong relationship due to blood ties. By sharing the same values and principles the stronger the quality. Putnam (2000) pushed forward the concept by developing five categories which are the foundations of the community. The categories are: community organizational life, engagement in public affairs, community volunteerism, informal sociability, and social trust, which in fact, all of them clearly potentially occur in public spaces. Through secondary sources such as exiting survey data Putnam established a relationship between human health and welfare aspects. For instance, physical diseases such as heart attacks, strokes, cancer and colds and mental illness such as depression, were inversely related to social and family bonds and others group membership. Serious mental illness such as schizophrenia, paranoid/delusional disorder, bi-polar disorder and antisocial personality are strongly associated with depression (Craft & Landers, 1998). Putnam (2000) demonstrated that poor social capital is as bad as smoking, obesity, elevated blood pressure or even physical inactivity for human health. Furthermore, schizophrenia and suicides among other mental illness are associated with weak social and family bonds (Lindheim & Syme, 1983). We agree with Jackson (2003) when she states that the social capital starts at the scale of the neighbourhood and most commonly in public spaces. Furthermore, the bonds that are established to form a community are not limited to the squares or green spaces, the streets also play a crucial role. One the intrinsic features of the street is that as a public space allows to gather people without having an active network but through the immediate communication among individuals who recognise their common identity mediated through the space, also called “passive networks” (Bayat, 1997). For instance, women working in similar jobs (such as maids or housekeeping) who don’t know each other are able to develop this passive networks even in the train going to work (Bayat, 1997). Thus, also public transportation becomes a scenario to develop this intrinsic networks. Here it lays the importance of permitting and maintaining people’s moral strength to participate and fully express in ways congruent with democracy when

in public spaces. Such maintenance of people's capability to participate and express in accordance to democracy requires to take citizen's dignity into account and, specifically, the elements of the urban environment that thwart that dignity, for instance: the characteristics of the means (public transport) that citizen's use to go to public spaces. For a citizen, which dignity has been diminished by the environment will not very likely participate nor express him or herself in a way that accounts as democratic (Sen, 1999).

Public transport and health

In health sciences have been consistently reported that having access to a car is related to lower mortality rates and better health (Davey Smith, Shipley, & Rose, 1990; Smith & Harding, 1997) (Smith, Shipley & Rose, 1990; Anon, 1997). However, Ellaway et al. (2003) criticise this statement by arguing that car ownership is highly related to other social and material advantages such as social class. Carr-Hill, Sheldon & Thunhurst (1992) support this argument by stating that "Car ownership principally reflects income and this in turn a whole range of factors relating to access to resources and power" (1992:p.27). For instance, in Scotland study by Ellaway et al. (2003) indicate it cannot be assume that car access is associated with better health only because it reflects material assets,(Carr-Hill, Sheldon & Thunhurst, 1992), since we have controlled for occupational social class. Furthermore, the study shown that car ownership is associated with more favourable psychological characteristics, and there is increasing evidence that psychosocial factors are important for health, which reinforces previous suggested claims (Marmot, 2018; Timio *et al.*, 2001). Thus, better psychological health cannot be attributed to car ownership as a single factor. A study in Barcelona (Rojas-Rueda *et al.*, 2013) demonstrate that a 40% reduction of short and long car trips by alternating bike, walk and bus, could prevent a large number of cases of morbidity (60–248) each year in travellers and general population. It concludes that in such scenario transport policies directed to reduce car use and increase public transport and cycling trips have health benefits in terms of diseases. Ming Wen and Rissel (2008) support this argument by stating that to use public transport or to cycle are good strategies to maintain healthy weight for men. Although healthy weight cannot be causally attributed to cycling and use of public transport in their study, the link is plausible. However, despite these findings there is a lack of studies focused in the relationship between public transport and mental health at the city scale.

Having established the plausible relationship between public space, public transport and health, we will move now to explain the public transportation improvements in our case study.

Public transport in Mexico

In Mexico around 68% of the population, which accounts 87.83 out of 129.16 million (United Nations, 2018b), use public transport in cities on a daily basis (La Razón, 2014). Mexico City among Tokyo, Delhi, Shanghai and Sao Paolo, is one of the five megacities worldwide with around 22 million inhabitants (United Nations, 2018c). According to INRIX Mexico City is one of the top 20 traffic congested cities (Cookson, 2018). However, it is worth to mention that a few years ago, it was ranked in the first position, while currently is in the 16th place. Mexico City has one of the most efficient and extended public transportation system in Latin America. The public transport system is integrated by the subway, Metrobus (bus rapid transport); buses, intercity train, trolleybus, bike sharing, among others. The subway network and the Metrobus system, which are interlinked with each other, mobilise more than 5.5 and 1.3 million of people respectively every day (Redaccion, 2017; Sarr, 2017). Consequently, any change in either one has an impact in user's life.

Metrobus in Mexico City

In 2006 Metrobus as a public transport system was implemented with an exclusive transit lane for utter busses designed to provide a safe and trustworthy service. Cities such as Sao Paolo and Curitiba in Brazil, Quito in Ecuador and Bogota in Colombia use a similar transport system. Metrobus is a successful example of public and private business partners because it replaced more than 262 concessionaire units of the Line 2. Regarding its management, Metrobus is a public entity decentralised from Mexico City government, which started operations with no more than 20 vehicles, currently this number is more than 688. Metrobus system has seven lines working from 6:00 to 24:00 hours at 22 km/h of speed. The price of a trip is around £0.24⁷ and it is free for children, people with disabilities and seniors over 70 years old.

In 2008, Metrobus line 2 started operating, providing transportation for people living in *Ciudad Nezahualcoyotl, Iztapalapa and Iztacalco* along 20 km. In the same year, Hidalgo and Graftieaux (2008) did a study focusing on technical, financial and performance information regarding bus system improvements in 11 cities in Latin America and Asia. They compared the bus rapid transit system between different cities such as Sao Paolo and Curitiba (Brazil), Santiago (Chile), Beijing (China), Bogota and Pereira (Colombia), Jakarta (Indonesia), Leon and Mex-

⁷ Exchange rate at 24.66 pesos per GBP, consulted on 8th of October 2018.

ico City (Mexico) and Quito and Guayaquil (Ecuador). They concluded that the city transportation systems reviewed have indeed improved local travel conditions as well as the quality and performance of public transport. Furthermore, as efficiency has been improved the energy consumption and CO emissions have been reduced as well. However, the benefits for the population in terms of health have not been investigated.

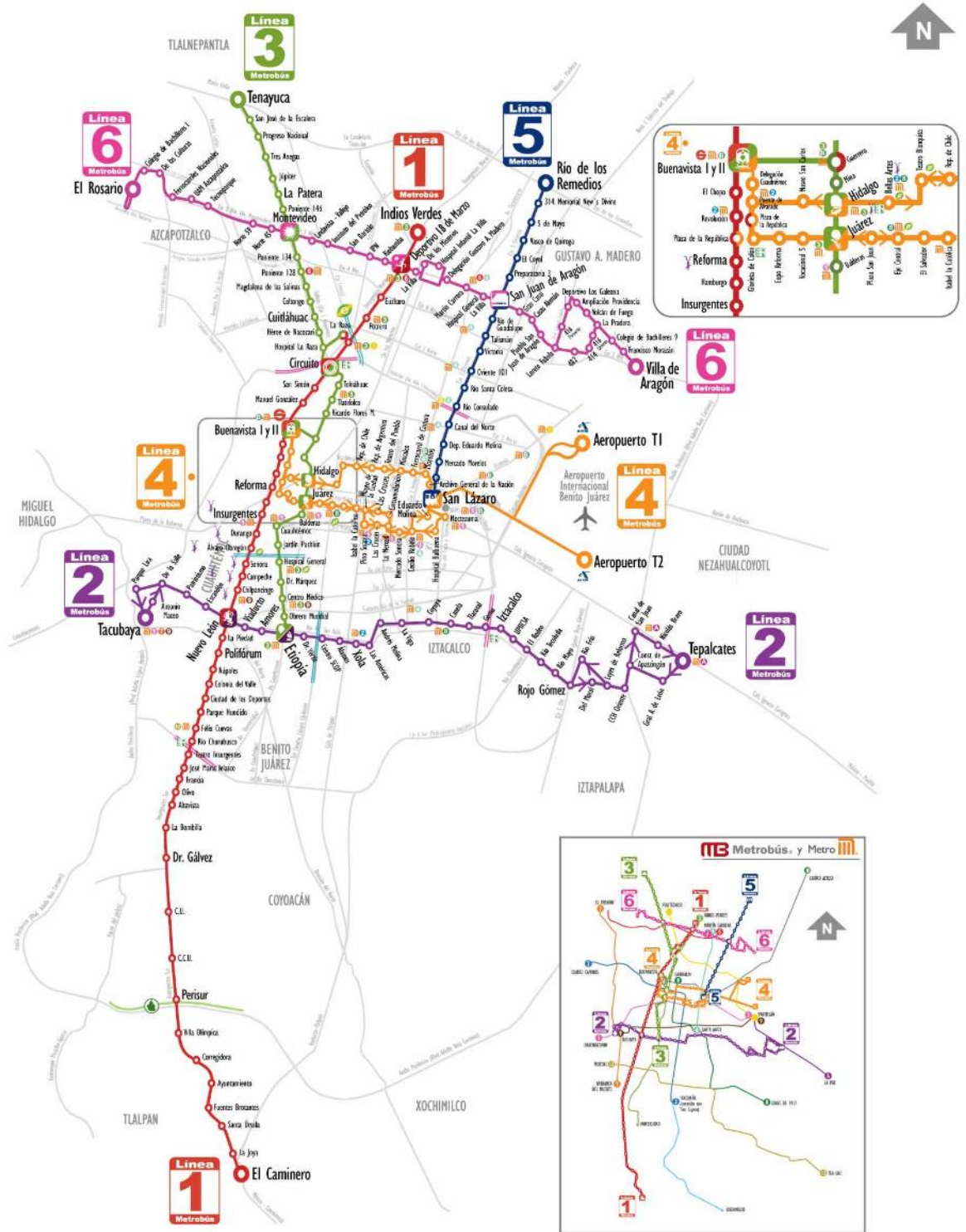


Figure 1: Metrobus Lines map (Gobierno de la Ciudad de México, 2018).

In 2011, Metrobus line 3 initiated operations transporting passengers across *Reforma*, *Tacubaya*, *Insurgentes* and reaching Cuernavaca along 67 km. In 2012, Metrobus line 4 started to provide transportation services across the airport and high tourist attractive places such as the

Cathedral, Wax Museum and Garibaldi Square. Similarly, in 2013, the fifth Metrobus line started operations, providing services along 10 km across delegations such as *Gustavo A. Madero* and *Venustiano Carranza*. In 2015, authorities (Pazos, 2015) reported that the Metrobus transport system had established a new record by transporting more than one million of passengers in one single day. Lastly, at the beginning of 2016 Metrobus line 6 was inaugurated, providing transportation along 20 km, serving *Azcapotzalco* and *Gustavo A. Madero* delegations. Currently, the Metrobus could be considered as an efficient public transport system connecting several areas of the city and the metropolitan area.

Macrobus in Guadalajara

Located in the west coast of Mexico, Guadalajara is the capital city of the state of Jalisco. Guadalajara and its metropolitan area have a total of 4,298,715 inhabitants, which is among Mexico City and Monterrey one of the most populated urban areas in Mexico. Macrobus is a bus rapid transport system in Guadalajara, which was launched on March 11, 2009. The line 1 runs across 16 km linking the inner city with the metropolitan area. In 2010, the lines 2 and 3 were added linking a new central bus station and the international airport respectively (see Figure 1). Currently, Macrobus system, provides service to the metropolitan area benefiting *Tlaco* and Guadalajara directly and *Tonala* and *Zapopan* indirectly.

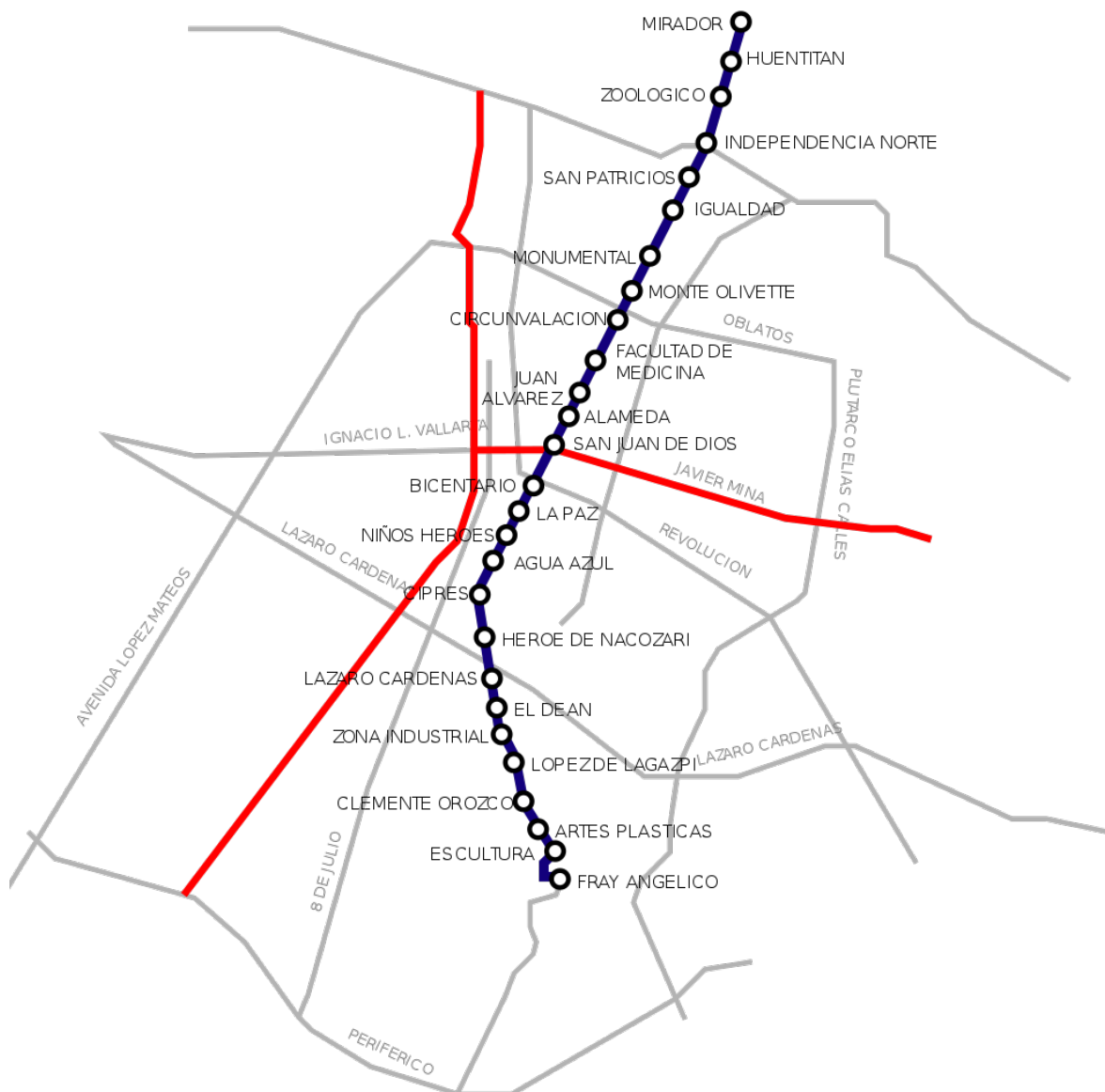


Figure 2: Macrobus Lines map (source: SITEUR, 2018).

This section has attempted to provide a brief summary of the bus rapid transit system in different cities and particularly Metrobus in Mexico City.

Methodology

One of the most well-known tools for assessing mental health among a determinate population is by analysing the number of deaths related to depression or other mental illness (World Health Organization, 2017). A quantitative approach was employed since it is simpler to understand. A case-study was adopted to conduct this exploratory study comparing two cities in Mexico. For the purpose of this longitudinal analysis the data was gathered from the Instituto Nacional de Estadística y Geografía (INEGI) which is a governmental institution that collects population

data, which includes data from the whole country. Mexico City (including Estado de Mexico) and Guadalajara were the areas selected for the study analysis. Estado de Mexico (Edomex) is one of the 32 federal entities of Mexico, which is the most populous and most densely populated state. Edomex's municipalities and the delegations benefited by the public transport improvement in Mexico City (Metrobus) were analysed. Metrobus provides transport service across Mexico City and Edomex (Figure 2). These municipalities are part of the metropolitan area and they represent 75% of the total population of Edomex and delegations represents 56% of the total population of Mexico City. First, the death rate index related to depression of Edomex and Mexico City, and Guadalajara were gathered and organised separately. Lastly, a comparison was made between the different contextual scenarios (Mexico, Edomex and Mexico City) to establish whether there is a difference in trends. A difference that can be explained by the absence or presence (in each of the scenarios compared) of better public transport services. Further data collection is required to determine exactly how the improving of public transportation affects mental illness.

Results

Simple statistical analysis was used to assess the impacts of the implementation of *Metrobus* line 1 and 2 in regard of population health. Table 1 shows an overview of deaths related to depression in Mexico as a whole country between 2012 and 2016. From this data we can see that in the year 2014 the deaths related to depression, increased by 49% in comparison to 2012. In contrast, by 2016 the number of deaths reduced by 28% in comparison with the peak in 2014. Even though in 2016 the number of deaths was 8% higher than in 2012 we could argue that there is a positive trend. Table 2 illustrates the number of deaths related to depression of both Mexico City and Edomex during the same period of time. What is interesting about the data in this table is that from 2012 to 2016 the deaths related to depression have been decreased about 47%. In addition, what stands out in the table is that the number raised 21% during 2014 similar to the national trend (see Table 1).

Table 3 illustrates the deaths related to depression in Guadalajara and its metropolitan area from 2012 to 2016. Between 2012 and 2014 the number of deaths remains with no changes until 2015 when it increased by 12.5%. However, during 2016 the indicator reduced more than 34% similarly to the scenario in Mexico City.

Table 1: Deaths related to depression in Mexico (source: INEGI, 2018)

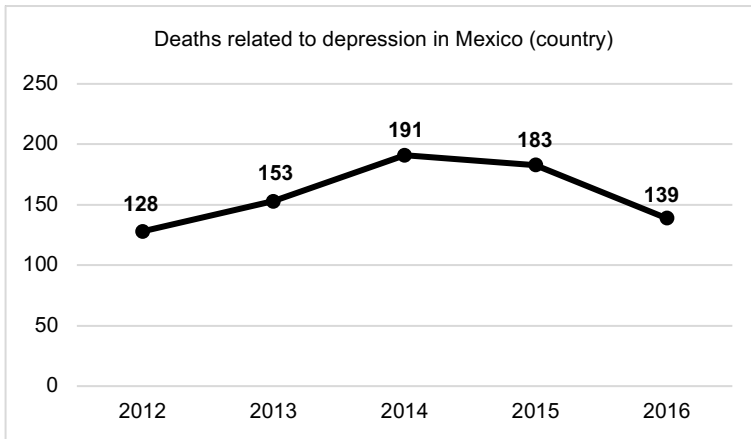


Table 2: Deaths related to depression in Mexico City and Edomex (source: INEGI, 2018)

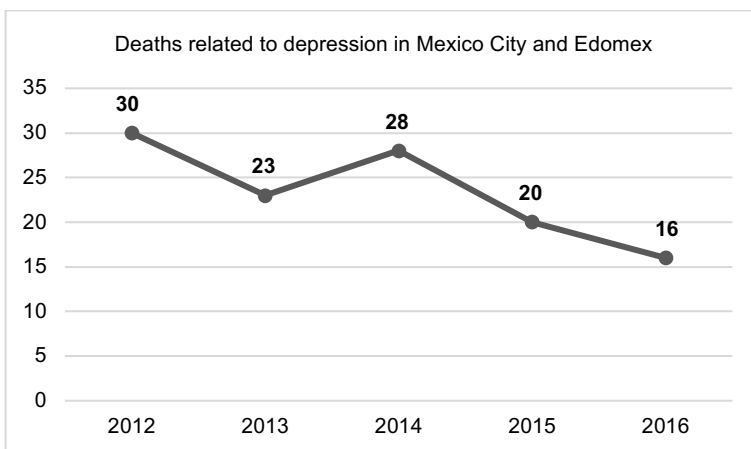
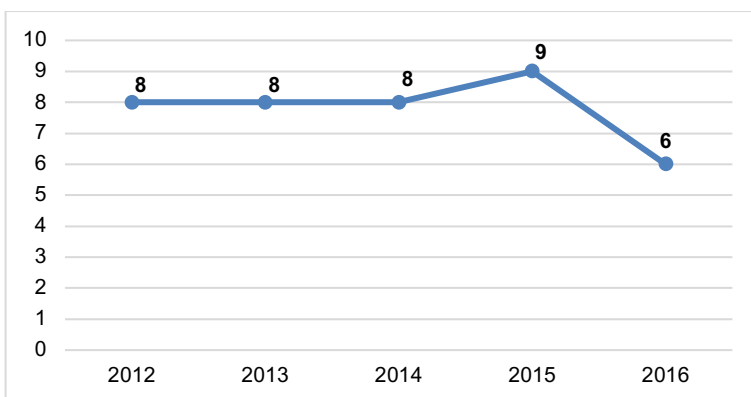


Table 3: Deaths related to depression in Guadalajara and metropolitan area (source: INEGI, 2018)



Discussion and Conclusion

A clear relationship between the availability of open public spaces and physical health has been reported in the literature, although very little was found in the literature regarding mental health. Despite the initial state of the study, it was found an evident correlation between the implementation and improvement of the rapid bus transport and population’s mental health. Surprisingly, in the case of Mexico City the number of deaths related to depression raised in

2014 similarly to the rest of the country. A possible explanation for this might be that during this year there was the European crisis and a huge drop in the oil prices worldwide (Infobae, 2017; Giles, 2014). The latter affected the Mexican economy and therefore the entire population. Regarding Guadalajara, this increase was reflected until 2015. This inconsistency may be due to the delayed effects of the global crisis mentioned above which usually are first evident in the country's capital city.

According to these data and supporting Ellaway et al. (2003) claims, we can infer that the way in which people mobilise in cities have an impact not just in their physical but also mental health. Further work is required to establish the viability of the argument presented here. To develop a full picture of mental health and its relationship with the quality of public transport, additional studies will be needed that take into account primary data sources.

This paper has argued that the improvement of the public transport system conceptualised as an extension of public spaces in metropolitan urban areas contributes to mental health improvement of citizens. It is a reformist transformation for the benefit of the citizens. Similarly to Irazabal's (2008) concept of reformist transformation inspired by ideas of Habermas (1991), explaining that the improvement of society and a democratic system are in a continuous flux, which transitions phases vary from a diverse range of order/chaos and time lengths which are evidenced through history. Thus, following this argument, the more options of transportation the more citizen's individual freedoms. It is important to analyse and understand the impacts of democracy and political freedoms on the citizen's lives and capabilities (Sen, 1999).

Despite the research presented here is just an initial study and its result cannot be considered as final, there is enough evidence to suggest the plausible relationship between public transport and mental health. Taken together, these results suggest that the quality and options provided by the transport system has implications in people's mental health. The scope of this study was limited in terms of data availability, due to the fact that in 2012 INEGI made criteria changes concerning how to count the death causes related to mental health. Despite its exploratory nature, this study offers some insight into the relationship between public transport and health. Overall, this study strengthens the idea provided by Rosling (2017) when he suggested population's health could be improved by other means not just building hospitals and providing doctors. This work contributes to existing knowledge of health by providing evidence of two metropolitan areas in the Latin American context.

Appendix 2a: Understanding the temporary appropriation in relationship to social sustainability



Understanding the temporary appropriation in relationship to social sustainability

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ARTICLE INFO

Keywords:
Temporary appropriation
Appropriation
Urban sustainability
Social sustainability

ABSTRACT

This paper will review the relevant literature about the conceptualisation of the temporary appropriation within the urban environment. A vast review of theoretical and empirical texts reveals that despite the lack of a defined theory in this specific field, the temporary appropriation is a key concept for the understanding of people's sense of belonging to a place, and identity. The paper, therefore, attempts to fill the research gap through an extensive cross-disciplinary literature review that includes topophilia, space production, and environment and behaviour theories. Thus, the aim of the present writing is to frame, within the urban context, the relevance of the temporary appropriation in relation to social sustainability. To do so, it identifies and categorises the temporary appropriation into three main groups of activities featuring the urban landscape.

1. Introduction

The term appropriation was firstly introduced by Korosec-Serfaty in the Proceedings of the Strasbourg conference in 1976. Within the field of environmental psychology, the term appropriation is described as a temporary phenomenon that implies a dynamic process of interaction between the individual and its surroundings (Korosec-Serfaty, 1976). It is a process similar to that of humanisation, which is the fundamental societal defined meanings interiorised by the individual (Gruemann, 1976). Since then, several authors such as Purcell (2002), following Lefebvre's work, Pol Urrutia (2002) with his dual model, and Yory Garcia (2003) with the theory of topophilia, have used the term to explain the theoretical link between people and places. These authors consider the appropriation as an inborn necessity of humans that can be expressed through activities that occur in the urban landscape. Public spaces are an essential part of the urban landscape and their design is therefore strongly linked to the possibility of occurring activities related to the Temporary Appropriation (TA) (Madanipour, 1996; Moudon, 1991; Noschis, Dosio, Feddersen, & Triantis, 1978). Thus, while appropriation is a broader term, its temporary variation refers more specifically to public spaces. Although there is conspicuous literature on the more general theme of appropriation, a phenomenon that refers to a lasting and consistent condition over the years (Ardura Urquiza, 2014; Diaz & Ortiz, 2003; Ramirez-Lovering, 2008) and, even if less, on TA, that refers to non-permanent, daily or extemporaneous appropriation (Fonseca Rodriguez, 2015; Lara-Hernandez, Melis, & Caputo, 2017). The accent in the latter has always been placed on the informality of

this action. The present paper intends to focus on the TA instead as a consequence of the necessity of adapting human needs of a city that deprives the population of reference points due to sudden and unexpected changes. In this last case, the temporality of appropriation becomes an essential element of flexibility, the study of which, however, still constitutes a research gap. Hence, the present paper takes into consideration the assumption that the current conjuncture crisis due to the unstoppable growth of the cities imposes a reflection on their development in terms of sustainability (Lehmann, 2015), and therefore on the adaptation of the concept of appropriation with respect to the aforementioned phenomena of growth and change.

The following section describes the essence of appropriation as a concept in relation to the social nature of the human being and within the urban context as a citizen's right.

2. Appropriation

The Oxford English Dictionary (2015) defines appropriation as the making of a thing private property. However, within the socio-urban design fields, the use of the term has no consensus and remains vague. For instance, some authors (Araya Diaz, 2016; Blanco, Boser, & Apaolaza, 2014; Garcia Ramon, Ortiz, & Prats, 2004; Ramirez-Lovering, 2008) use the term when referring to the illegal or informal use of the public space or territory by analysing their time occupancy, utilised design elements and their daily routes. Nevertheless, it is ambiguous to refer to the appropriation as both an illegal and informal use of the public space since it belongs to the citizens, and so does its use, and

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Appendix 2b: Temporary appropriation of public space as an emergence assemblage for the future urban landscape: The case of Mexico City

TECHNICAL ARTICLE

Temporary Appropriation of Public Space As an Emergence Assemblage for the Future Urban Landscape: The Case of Mexico City

Jose Antonio Lara-Hernandez, Alessandro Melis and Steffen Lehmann

Temporary appropriation (TA) is a re-emerging concept which occurs in the urban social landscape as a multidimensional phenomenon. Intended as multi-disciplinary and multi-scalar research, the present paper explores the way in which temporary appropriation could be interpreted as an assemblage product of other assemblages within the urban landscape. It, therefore, seeks to unravel and to re-think the nature of temporary appropriation through interconnected theoretical frameworks such as assemblage theory. Derived from the seminal work of Deleuze and Guattari (1989) and developed further by Manuel DeLanda (2016), assemblage theory focuses on the relations produced by the components of a whole rather than the components themselves. Thus, in the present paper, a diverse range of theories is combined together to conceptualise temporary appropriation as part of the urban landscape and as an emerging product of other assemblages such as culture, legal framework and urban design. These approaches are drawn together by illustrating Mexico City Centre as an example of a highly coded city in which these assemblages emerge. A representative sample street was selected as a case-study to analyse TA in relation to the streetscape design through participant observation and image analysis of the visual complexity of the streetscape. The paper concludes that assemblage theory could be used as a theoretical framework investigating urban-social phenomena. In addition, the study identified the visual complexity of the assemblage of the urban landscape that supports the greater diversity of TA.

Keywords: Assemblage theory; temporary appropriation; urbanism; social sustainability; Mexico City

1. Introduction

In total, 66% of the urban population today live in slums or informal settlements. This proportion is expected to increase to 70% by 2050, whilst the total urban population will include 80% of the world population (United Nations, 2014). In such a scenario the informal use of public spaces in a compact city, argued to be a more sustainable urban model (Bay and Lehmann, 2017), will play a decisive role.

The literature indicates that temporary appropriation (TA) is a key concept related to the informal use of public space. It is claimed that TA of the urban landscape plays a decisive role in sustainability in its social dimension (Seghezzi, 2009; Ramírez Kuri, 2010; Devlin, 2017; Lara-Hernandez and Melis, 2018; Marx and Kelling, 2018). Consistent with this premise, its relevance will grow in conjunction with the dramatic growth of the informal part of the urban population.

The potential risk of a scarcity of urban open spaces within the compact city will favour the multidimensional use of the street (Ekawati, 2015), nevertheless very little

is currently known about the true nature of TA of the streetscape and its contribution to the social sustainability of the urban landscape. Hence one of the two main aims of the present research is to explore the relationship between the urban design landscape and behavioural patterns, through the study of TA. Considering the novelty of the subject and its interdisciplinary nature, to address this research aim the paper uses an assemblage thinking approach which focuses on the relations between the assemblage's components rather than on the individual components themselves. In this specific case, it identifies three main components which are also assemblages (to be discussed further later). Firstly, TA of the streetscape as an emergence indicator of the informal use of the urban landscape; secondly, culture as a factor in social sustainability and lastly, the legal framework as a component (and an assemblage) regulating the fruition of public space.

The second aim of the present study is to describe TA as part of the urban landscape and as an emerging assemblage product of other assemblages or 'social wholes', such as cultural and legal frameworks. Therefore the focus of the present paper is the relationships and interconnections between TA and assemblage theory in the field of urban sciences. TA is a re-emerging concept which

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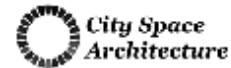
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Using the street in Mexico City Centre: temporary appropriation of public space vs legislation governing street use

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Abstract

Historically there has been a rich discussion concerning the function of streets in cities, and their role in urban life. This paper outlines the relevance of temporary appropriation for understanding social dynamics within a given urban environment, looking in particular at activities occurring in the street. It takes as a case study Mexico City Centre and examines the laws and regulations set out by the government of Mexico City which regulate the use of the street. It contrasts this with the ways in which the inhabitants of the city appropriate public space on a daily basis. There is a contrast between the lack of clarity in the legislation surrounding potential activities occurring on the street, and a seemingly tacit consensus between citizens regarding how they appropriate such public spaces. We explore this contrast and outline ways in which public space is used in traditional and unexpected ways, how creative ways are found to use the street area within the spirit of the law, and where further research on this topic this could lead in future.

Keywords: public space, temporary appropriation, streets, city centre, Mexico City Centre

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Appendix 3a: Fonte Mazzola Cultural Park by Heliopolis 21. CARU 2018

Fonte Mazzola Park of Culture by Heliopolis 21
Understanding Originality, Significance and Rigour in
Practice Based Research

Alessandro Melis
J. Antonio Lara-Hernandez
University of Portsmouth

Project by H21
Directors: Nico Panizzi, Gianluigi Melis & Alessandro Melis
Client: Peccioli Council & Belvedere S. P. A.
Major: Renzo Macelloni

Arst re Search
CARU Annual Conference 2018
Oxford Brookes University

25 November 2018

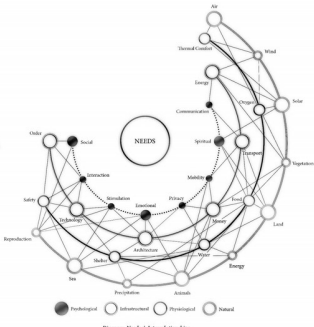


Contemporary Arts Research Unit

OXFORD BROOKES UNIVERSITY

Fonte Mazzola Park of Culture by Heliopolis 21

Alessandro Melis
J. Antonio Lara-Hernandez
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Appendix 3b: The return to nature in the Austrian radical Thinking: the case of Gunther Domenig, Venice Biennale 2018

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[http://ejournal.uvka.de/spatialconcepts/archives/...](http://ejournal.uvka.de/spatialconcepts/archives/)

The return to nature in the Austrian radical thinking: the case of Gunther Domenig

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Abstract

This paper discusses the inclusion of nature in the utopian vision of the radical movements of the 60s and 70s. In particular, it presents the Austrian radicals as the first and main supporters towards the aforementioned tendency. The introduction of nature in the built environment is a feature of Austrian radicalism since its first generation which includes authors such as Raimund Abraham, Walter Pichler, Hans Hollein and Gunther Domenig. The latter is taken here presented as the main representative of this current on the architectural scale. Three of his works are described in the text to represent three different declinations of this trend towards bioclimatic.

Keywords: Radicals, architecture, domening

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Introduction to Austrian Radicals

The present text intends to focus on Gunther Domenig's idea of reuniting nature and architecture, considered here to represent the larger phenomenon of radicalism in the 60s and 70s. The novelty of the present text is the acknowledgment of the foundational role of Gunther Domenig, within the phenomenon of Austrian radicalism. Although this role is recognized by its protagonists as Coop Himmelb(l)au, it has been rather neglected by critics until today. However, to better understand the position of Domenig's work it is necessary to take a step back and briefly describe how the Austrian radicals fit into the broader context of new utopias.

During the second half of the 20th century, growing from, and in response to, post-war trends, several architectural paradigms assumed positions in opposition to what was commonly held to be the sterility of modernism. They often forged alliances with technology and futurism, or with traditions and context. *Radical design*, as defined by the Italian architectural critic Germano Celant, entered archi-

techtural discourse as the twentieth century's version of historical utopias.¹ Although Celant is credited with coining the term *Radical design*, Gianni Piretti's seminal text on the Radicals recognized Radicalism as a historical phenomenon.² The Radicals were mostly promoted in Italy by the journals *Casabella*, *Domus* and *Controspazio* and exhibitions, such as *Utopia o/rivalutazione*, "Italy: The New Domestic Landscape: Achievements and problems of Italian Design"³ and "Living cities". While the relation of the Radicals' visionary focus to future technology is widely acknowledged⁴ the same cannot be

¹ G. Celant, Senza titolo [Without a title], in: *Argomenti E Immagini Di Design* 3, 1971, 76-81.

Id., *Radical architecture*, in: *Italy: The new domestic landscape*, 1972, 380-387.

² G. Piretti, *Radicals: Architettura e design 1960/73* [Radicals: Architecture and design 1960/73], Venezia 1996.

³ E. Ambase, *Italy: The new domestic landscape: Achievements and problems of Italian design*, New York 1972.

⁴ L. Benevolo, *Storia dell'architettura moderna* [History of modern architecture], Bari 1996, *Storia dell'architettura moderna* [History of modern architecture], Torino 1992.

3.

Title: *Energy Galleries: a sustainable opportunity for future cities.*

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3.1 Introduction to Solar Galleries

This research aims at identifying the potential of an innovative design for energy generation at an urban scale.

By strategically locating energy-generation systems integrated with modular pavilions, green houses, winter gardens, street canopies or public facilities in the open spaces, it is possible to reduce carbon dioxide emissions by lowering the energy consumption produced during public events and activities that are held indoors.

The paper refers to the aforementioned hybrid architecture types, able to turn urban fabric from energy consuming to energy generating, as Solar Galleries (SG).

In turn, SG would increase the energy generated by renewable sources, encouraging the use of public space thanks to higher standards of comfort

Appendix 4: UPR16 Form

FORM UPR16
Research Ethics Review Checklist



Please include this completed form as an appendix to your thesis (see the Research Degrees Operational Handbook for more information)

Postgraduate Research Student (PGRS) Information		Student ID:	up868847	
PGRS Name:	Jose Antonio Lara-Hernandez			
Department:	School of Architecture	First Supervisor:	Dr. Alessandro Melis	
Start Date: (or progression date for Prof Doc students)	June 2017			
Study Mode and Route:	Part-time <input type="checkbox"/>	MPhil <input type="checkbox"/>	MD <input type="checkbox"/>	
	Full-time <input checked="" type="checkbox"/>	PhD <input checked="" type="checkbox"/>	Professional Doctorate <input type="checkbox"/>	

Title of Thesis:	Temporary appropriation of the built environment: a symbiotic urban phenomena
Thesis Word Count: (excluding ancillary data)	53000

If you are unsure about any of the following, please contact the local representative on your Faculty Ethics Committee for advice. Please note that it is your responsibility to follow the University's Ethics Policy and any relevant University, academic or professional guidelines in the conduct of your study

Although the Ethics Committee may have given your study a favourable opinion, the final responsibility for the ethical conduct of this work lies with the researcher(s).

UKRIO Finished Research Checklist:
(If you would like to know more about the checklist, please see your Faculty or Departmental Ethics Committee rep or see the online version of the full checklist at: <http://www.ukrio.org/what-we-do/code-of-practice-for-research/>)

a) Have all of your research and findings been reported accurately, honestly and within a reasonable time frame?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
b) Have all contributions to knowledge been acknowledged?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
c) Have you complied with all agreements relating to intellectual property, publication and authorship?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
d) Has your research data been retained in a secure and accessible form and will it remain so for the required duration?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
e) Does your research comply with all legal, ethical, and contractual requirements?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

Candidate Statement:

I have considered the ethical dimensions of the above named research project, and have successfully obtained the necessary ethical approval(s)

Ethical review number(s) from Faculty Ethics Committee (or from NRES/SCREC):	FCCI-2018-001
------------------------------------------------------------------------------	---------------

If you have *not* submitted your work for ethical review, and/or you have answered 'No' to one or more of questions a) to e), please explain below why this is so:

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Signed (PGRS):		Date:	10.12.2018
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