

The uses of space syntax historical research for policy development in heritage urbanism

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Abstract The application of space syntax methods to heritage related questions has a long track record both in the field of space syntax research and beyond, for example in archaeology. These studies deploy the theories and methods of space syntax to explore the socio-cultural dimension embedded in spatial systems of historic and archaeological significance. Space syntax analysis provides a link between the material and immaterial aspects of ‘spatial’ culture. It offers a critique of built environment typologies defined in terms of stylistic periodisation by advancing an understanding of the role of *spatial configuration* in the production and reproduction of space-time events. In the context of urban heritage studies, this means looking beyond the value of buildings as individual objects to buildings as elements in emergent arrangements of social space. Building on the comprehensive review of the disciplinary interface between urban history and space syntax historical studies provided by Griffiths (2012), this chapter advances ‘heritage urbanism syntax’ with the aim of orientating this body of historical research towards contemporary issues of urban heritage. It identifies three kinds of *heritage urbanism syntax*: (1) conservation areas; (2) street scales, and (3) spatial cultures in order to assist critical reflection on the application of this perspective to urban heritage contexts. The chapter highlights how a diachronic understanding of spatial cultures enables an integrative approach to heritage urbanism that situates heritage within both historical and contemporary urban landscapes. It describes the potential contribution of space syntax to inclusive bottom-up definitions of heritage and resilient heritage futures.

Key words: *Space Syntax, Heritage, History, Historical Research, Spatial Cultures*

1. Introduction

Space syntax research has more to offer to the urban heritage sector than is currently acknowledged in the field of heritage studies. Despite the long-standing engagement of the field with heritage-related topics and case studies, as well as the recent development of space syntax research in relation to the field of urban history, heritage studies is not a well-defined field in space syntax research.³ As Griffiths (2012), in highlighting the strong tradition of historical case studies produced by space syntax researchers points out, where a research theme goes largely unacknowledged *within* a research community it acts as an impediment to opening up constructive interdisciplinary dialogue *beyond* that community. A lack of articulation of urban heritage, a similarly recessive (and related) theme in space

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³ See also Griffiths, S. and Vaughan, L. (forthcoming, 2018). Mapping spatial cultures: contributions of space syntax to research in the urban history of the 19th Century city. *Urban History*. Special edition on History and Mapping.

syntax research, also has implications for the possibility of achieving a wider application of syntactic approaches to the study of urbanism. Bearing this in mind, the aim of this chapter is to probe the interface of spatial urban history using space syntax methods, with urban heritage studies and policy development, in order to identify new research trajectories for future practice.

Defining built cultural heritage outside limited conceptions of architectural and historical value is a highly pertinent topic in sustainable heritage management theory and practice (Tweed and Sutherland 2007). This means looking beyond the value of buildings as individual objects to buildings viewed as components in emergent arrangements of social space. Space syntax theory focuses on spatial systems and patterns of open space which are configured by building aggregates. This implies a critique of traditional approaches to the historic built environment in terms of stylistic periodisation in preference for an understanding of the role of *spatial configuration* in the production and reproduction of space-time events. Space syntax theory proposes a dynamic link between urban life and urban space – a ‘synchronic’ (because configurational) description of space-time events (Hillier and Hanson 1984, p. 94) with social connotations. Space-time events are defined in relation to qualities of visual and physical accessibility (Penn 2003), distance and direction (Dalton and Bafna 2003), and the potential for generating social encounters (Hillier 1996). Beginning with an explanation of this link between *material* and *immaterial* urban spatial cultures, the discussion develops to consider how the study of historical spatial syntaxes can make a contribution to alternative assessments of urban ‘spatial’ heritage.

At the core of space syntax theory is the proposition that the structure of space is itself a cultural artefact that defines how social groupings manifest their spatio-temporal existence. As such, space syntax theory renders space relevant to cultural and historical (and historic) attributes, and by extension, to assets, values and definitions of heritage. By understanding spatial cultures as the product of local topological and geometrical conditions space syntax can give quantitative description to place-specific aspects of cultural value. An increasing amount of research on urban histories using space syntax methods discusses historically-specific formative processes of urban change, and the historical value of urban structures. Building on the comprehensive review of the disciplinary interface between urban history and space syntax historical studies provided by Griffiths (2012), this chapter advances ‘heritage urbanism syntax’ as a complementary development that extends this body of historical work towards contemporary issues in urban heritage studies and practices. To this end the chapter focuses on the study of histories of spatial cultures as a bridge between space syntax and heritage studies. The intention is to help space syntax researchers to reflect critically on how historical thinking can be usefully applied in heritage contexts. It argues in favour of the role space syntax plays in analysing and identifying multiple facets of urban heritage, and in the potential to produce hermeneutic (Griffiths 2011, 2012) as much as prescriptive applications of space syntax methods.

2. Space syntax and urbanism

The theoretical and disciplinary affiliation between space syntax and urbanism is direct and straightforward by definition and area of study. Urbanism may simply be understood as a specific mode of life which is typically – but not exclusively (Wirth 1938, p.7) – manifested in cities and metropolises. Talen’s (2005, p. 2) more elaborate definition considers [American] urbanism as ‘*the vision and the quest to achieve the best possible human settlement [in America], operating within the context of certain established principles.*’ Space syntax is a theory and methodology for the study of the formation of human settlements and architectural complexes (Hillier et al. 1976). It emerged to address the disjunction between the ‘designed’ and the ‘lived’ (Westin 2011, p. 232) in response to debates about architecture and the city which followed criticisms on the difficulties associated with the modernist phase (Hillier 1986; Hanson 2000). Its conceptual basis seeks to address the space-society relationship as a dynamic and open-ended formative process of spatial and social structures in mutual co-dependence (Hillier and Vaughan 2007); space is not just a background to human activity – it is a system with inherent spatial and social agency (Harvey 1973; Hillier and Leaman 1973; Lefebvre 1991).

The role of physical space in enabling social life is the main focus of space syntax, and a vast body of research has interrogated this topic in the context of urbanities (as well as buildings). Space syntax research uses mathematical modelling tools and measures that provide topological-geometric (describing changes in path direction and orientation), and metric (based on units distance) attributes of

spatial systems conceived as *networks* and analysed as *graphs* (Hillier and Iida 2005). Empirically derived categories of social data can be mapped onto these configurational descriptions (typically in a GIS) to create a situated understanding of the functional patterns of space use in relation to their spatial-temporal arrangement (Hillier 1996, p. 194). Space syntax does not propose a deterministic relationship between space and specific social outcomes, rather it seeks to understand how the network effects of distance and connectivity relate to statistically probabilistic distributions of movement flows and human co-presence across different areas of urban space (Hillier 1999).

3. Space syntax and heritage

The application of space syntax methods to heritage related questions has a long track record both in studies originating from within the space syntax discipline and outside it, for example in archaeology⁴ (Ferguson 1996, p. 149; Smith 2011, p. 176; Letesson 2013; Stöger 2015, p. 63). These studies deployed space syntax to explore the socio-cultural dimension embedded in spatial systems of historic or archaeological significance. By adding a spatial dimension to Laurajane Smith's (2016) distinction between 'authorized' and 'alternative' heritage discourses, we may identify the following categories of space syntax work on heritage: Firstly, studies of *designed* urban heritage refer to research on monumentality in cities where the outcomes of architecture and planning curate urban spaces loaded with cultural symbolism⁵. Secondly, studies on *assigned* urban heritage include research on historic urban areas, such as the old city core, which are not necessarily monumental but are designated as heritage by planning law and protected for preservation⁶. The third category, *lived/emergent* urban heritage represents a long-standing prominent trend in space syntax efforts to interpret the collective cultural value and identity of everyday urban spaces⁷.

Overall, this body of research is concerned with advancing knowledge of the operational role and remit of spatial agency in the formation of urban cultures – in other words to understand more about what space *does* in heritage terms. Currently, there are only few exceptions (specifically in preservation, urban design, and urban regeneration) that make a case for using syntactic research to influence practice in the historic urban landscape. For space syntax to be acknowledged in heritage studies and for heritage to gain traction as a topic to engage space syntax researchers, both communities need to see the value in interdisciplinary projects that can overcome the disciplinary barriers that define areas of practice. It also needs to communicate the usefulness of syntactic analysis to relevant practitioners by making results accessible and translating them into constructive insights for policy development. The next section takes a first step towards the integration of the two fields in theory, research and practice for the development of *heritage urbanism syntax*.

4. The study of spatial history

This section highlights emerging research trajectories that aim to develop a constructive liaison between spatial history and heritage. It draws on the critique by Griffiths (2012) who assesses the methodological approaches and future prospects for the application of syntactic analysis in historical research. Here we expand the conversation by Griffiths to argue that historical understanding of spatial urban processes is in line with current shifts in heritage management policy and practice. We propose

⁴ There are over thirty publications which use space syntax tools in the study of multifarious archeological periods and regions: Old and New World New archaeology including the Canadian Arctic and South America (see Spence-Morrow 2009, p. 1 for an extensive listing of publications).

⁵ Hillier (1989) on the spatial cultures of Teotihuacan in Mexico, Versailles in France, and Brasília, Brazil; Fong (1999) and Mari and Karadima (2005) on monuments; Peponis et al. (1998), Koseoglu and Onder (2009) and Dalton and Bafna (2003) on landmarks; Holanda (2010) on the uniqueness of Brasília, Brazil; Psarra (2017) on city design production.

⁶ Karimi (2000, 2002) on urban conservation; Önder and Gigi (2010), Kubat et al. (2012) and Chiang and Deng (2017) on urban heritage enhancement strategies.

⁷ Aazam (2005) and Clark (2007) on rituals; studies on industrial heritage (c.f. Griffiths 2017, 2008, 2005; Davis and Dino 2015); Griffiths (2016) analyses the spatiality of 'processional culture'.

three areas of research for the development of heritage urbanism syntax: (1) conservation areas; (2) street scales, and (3) spatial cultures. These suggest possible areas in which the study of spatial history can contribute to policy-making for inclusive, sustainable and resilient heritage futures.

The study of spatial history enables the decoding of diachronic properties of spatial systems. There is a series of ‘syntactical growth processes’ studies (for summary, see p. 5 in Griffiths 2012) that examine the spatial evolution of urban and rural networks through ‘time-series comparisons’ (Griffiths 2009). These studies analyse and compare the synchronic structure of historical spatial systems between given time-periods using historical cartography (see Pinho and Oliveira 2009a, 2009b; and Serra and Pinho, 2011). When combined with morphological study (‘syntactical morphologies of histories’, see Griffiths 2012, p. 6) syntactical observations extend to consider social context and aim to identify the historical interdependencies of urban development in relation to the configurational properties of urban landscapes. This is what Griffiths calls a ‘chronology’ of functional space (2009, p. 660) in his study of the industrial heritage of Sheffield. Functions of spaces can be any socio-economic or cultural variable. Not only can we use space syntax to understand the historical role of a specific street/area, at a given historical time-period, within the spatial structure of a city as whole (synchronic), but also trace historical (diachronic) changes in the spatial structure of urban systems themselves (*ibid.*). The space syntax historical research has substantial contributions to offer to what the heritage sector calls a landscape integrated approach (Harvey and Waterton 2015) to heritage management and practice. The syntactical study of spatial history examines space, time, and function as interrelated layers of formative processes of the urban landscape which is seen as complex system; it interrogates how these layers and processes initiate change in the urban landscape and how they are in turn affected by change.

To identify diachronic characteristics of space, the study of spatial history emphasises the process of formation and transformation of urban space. In heritage studies the call to focus on heritage as emergent process comes from the need to understand the ephemeral dimensions of perceived heritage (Harvey 2001). Harvey (*ibid.*, p. 327) adopts a definition of heritage as ‘*a contemporary product shaped from history [...] a value-laden concept, related to processes of commodification, but intrinsically reflective of a relationship with the past, however that ‘past’ is perceived and defined.*’ The subjectivity of heritage definitions is gradually promoted in heritage practice through the shift from category-driven to process-driven heritage value assessments and guidelines for management (Veldpaus 2015). On global heritage practice fronts, the UNESCO 2011 Recommendation on the Historic Urban Landscape is such an effort, still work in progress, to escape static concepts of heritage (Bandarin and van Oers 2012, 2014). The passage from theory to practice remains a challenge (Veldpaus et al. 2013) and for updated tools to be formulated, there is a requirement for the redefinition of heritage values (Poulios 2010) and the assessment thereof. The following sections suggest ways in which space syntax study of spatial history may contribute to accomplishment of this oeuvre.

a) Conservation areas: lateral vs. confined

Ambiguity in characterisation methods of tangible heritage in the built environment is an unresolved problem in conservation practices and planning law (Palaiologou 2017). Whitehand (2009) makes a remark on the methodological gap between academic research and delimitation practices. The author overviews a series of case studies (including World Heritage sites, such as central Sibiu, Romania and St Petersburg, Russia) to point out the potential benefits of the Conzenian method of ‘morphological regionalization’ in planning. As Whitehand explains (*ibid.*, p. 6) morphological regionalization is the process of mapping and identifying ‘urban landscape units’. The method derives from the Conzenian historico-geographical approach for studying urban form (Conzen 1960, 1966). It proposes the study of history of urban form change to discern ‘morphological periods’ and the historical pace and types of urban development. Historical understanding is integral in this method, followed by an emphasis on two keywords: *process* and *landscape*. By considering morphological rather than stylistic periodization, the historico-geographical method escapes from materialistic-oriented norms of assessing the urban landscape. Instead, it considers density, footprint/built ratio, volume and land use. These are important metrics for understanding urban development processes, but it could be argued that their spatialisation or area delimitation across the urban landscape is to great extent predefined by the planning legacy of zoning (Taylor 2002; Bogaert et al. 2005). It is then anticipated that historical remains of zoning practices will create units or patches (McDonnell and Pickett 1990) in the urban

landscape with similar morphologies. In other words, the problem with established delimitation methods in urban conservation is that it recycles delimitation (or land use) practices of the past.⁸ The pertinent question here is: *how relevant and up to date are urban conservation zoning practices in facing today's challenges for sustainable urban heritage management, and sustainable urban development in general?* We argue that this is a key inquiry to which historical syntactic study of urban configurations can provide alternative answers.

The use of zoning tools in urban conservation practice more so than in other planning practices, is to define rigid regulatory boundaries for the protection of historic areas in urban systems (Elliot 2008). The aim of creating an 'impenetrable' compartmentalization of the historic urban landscape in terms of planning laws and management (*ibid.*) is evidenced in the definition of 'buffer zone' areas as 'added layers of protection' (Peterson 2005). These areas, which are in proximity to the historic core but not of historic value themselves, are often considered as being in need of even more forceful conservation rules than the official heritage sites themselves (Turner 2009, p. 17). It follows that it is not clear how conservation regulatory boundaries play a role in enabling a landscape approach – namely, an approach that aspires to treat urban landscapes in 'holistic' management frameworks (Rodwell 2003, p. 67). By delimitating the perimeters of a historic area and of the areas of influence, heritage management practices focus on the *tangible* values without necessarily addressing *intangible* agencies of change and socio-economic impacts (Mürner 2009, p. 12). In contrast to fragmented analysis and assessment of urban space characteristics, the space syntax approach suggests a study of spatial networks, of connected spaces, where streets are considered to have a role as structural city layer by performing as backbones of urban life (Hillier et al. 1993). Syntactic analysis of spatial histories is a time-space integrative approach (Griffiths 2012), in that it treats the wider landscape as inseparable and relational system, whilst it enables the consideration of sociological contexts over time.

Looking at the spatial histories of eighteenth and nineteenth Sheffield, Griffiths (2009) builds a methodology for 'bottom-up characterisation' of urban transformation and demonstrates how diachronic knowledge can shed light in otherwise obscure historical assumptions about the emergence and spatial identification of local places (hinterland villages) against or alongside global forces (urbanization). To develop further syntactic work in this area, future curricula for using space syntax in urban conservation could aim in addressing the ways in which the study of spatial history can inform, or even redefine, urban conservation delimitation practices from a polygon-based concept, to nodal-based systems, and explore the potentials of street-wise⁹, rather than area-wise, character assessment. Also, historical syntactic analysis may be applied to any spatial system that involves a human-environment interaction component, such as green infrastructure. Finally, the study of spatial history considers a space-time continuum that is crucial for tangible heritage to build strong and uninterrupted links with present and future urbanities. Heritage-led urban regeneration requires a balance between heritage values and sustainable development (Stubbs 2004; Pendlebury 2013; Alsalloum 2018), tested and evaluated in terms of its integration in this historical space-time continuum of urban phenomena (Guzmán et al. 2017, p. 200).

b) Street scales: adaptable vs. static

The previous section suggested that the study of spatial history enables methodological developments in urban conservation for bottom-up (i.e. related to spatial structure) assessment of the diachronic character of urban places, and that it is worth exploring the benefits of street-wise assessment of the historical urban fabric. Here the argument is further developed to discuss how knowledge of historical spatial processes acknowledges streets as dynamic urban heritage places (see Griffiths 2005). It questions heritage management practices that are permeated by static and materialistic views on the role of tangible heritage in urban life. It reviews space syntax studies of spatial histories that reveal the multiple and shifting roles of streets (local, citywide, regional, etc.) within constantly changing spatial systems over time. These studies come from Griffiths's (2012, p. 6) category of 'syntactical

⁸ The first author has conducted EPSRC funded research on 'Delimitating UNESCO Historic Urban Landscapes', presented in the 23rd International Seminar on Urban Form, in Nanjing, China, 2016 (Palaiologou et al. 2016).

⁹ See Palaiologou (2016) for an application of street-wise character assessment of Radlett, UK which was conducted for local policy development.

morphological histories’ and develop an open-ended dialogue between physical space and social context (*ibid.*).

The work of Vaughan et al. (2013) on the spatial histories of two ‘adaptable suburbs’ of outer London is characteristic of this line of research which looks at the diachronic spatial resonance of local places. Following the processes of suburban transformation for 150 years in terms of infrastructure and land use, the study makes a case for spatial ‘mechanisms of adaptability’ which enabled the resilient identity of the suburban high-street. Whilst being assigned new roles in relation to the wider urban landscape, the authors studied how the high-streets of Surbiton and South Norwood maintained their spatial significance locally as inheritance of their prominent role within the historical suburban street network. We can now see that this kind of work also establishes connections between spatial history and urban heritage. In the case of the London suburbs, the study of spatial history reveals a heritage urbanism syntax which overturns normative arguments about urban expansion and suggests that change is not necessarily associated with loss of character (*ibid.*). Instead, high-street ‘changeability’ (Törmä et al. 2017) fosters a dynamic place identity formation – what Vaughan et al. (2015) call ‘hedgerow ecology’. Palaiologou (2015) picks up how the historical transactions of the parts-whole relationship is still evident in the case of currently fully assimilated high-streets in the London urban core, such as Upper Street in Islington. It is the dynamic continuity of its structural role within the wider system, which distinguishes the high street compared to other streets (see Griffiths 2015). This consideration of continuity as a dynamic process gives way to adaptable rather than static definitions of heritage. The position of a street within the wider urban landscape is not considered as being a static, fixed property – it is studied as relational feature of the urban landscape that responds differently to the temporal and spatial scales at which heritage can be defined.

Space syntax research contributes to the study of the historical negotiation between continuity and change in spatial systems, where streets form the core spatial structure. It therefore offers a way of identifying the ‘heritage syntax’ of urban places. Spatial configuration, in contrast to visual appearance or land use, proposes a much more dynamic view of place formation: spatial configuration assumes a relational dependency between localities and the wider landscape. Conservation practices that lack flexibility and responsive measures rupture the identity of urban places (c.f. Lees 1994, Bianchi and Boniface 2002; Wang 2012) by disconnecting urban heritage from its urban context (Ripp and Rodwell 2015), by displacing communities (Martínez 2016), by exposing heritage to disaster risk (Ravankhah et al. 2017), and by politicizing heritage values (Fraser, 2008). All these issues are directly related to global sustainability indicators (Guzmán et al. 2017, p. 194) and pose the question: *How adaptable and integrative are heritage management practices in today’s challenges for sustainable urban heritage management, and sustainable urban development in general?* For urban heritage, and culture in general, to work as a driver for urban sustainability static and exclusive approaches to heritage values need to be revisited (Pendlebury 2013; Torre 2013; Poullos 2010). From a space syntax point of view, by understanding the historical role of streets planning-related agency in the urban landscape can take a synergetic view between continuity and change, between heritage and development (Marić et al. 2017).

c) Spatial cultures: an inclusive approach to heritage urbanism

‘Spatial culture’ is a recurring concept in space syntax theory and a fundamental one. It is put forward by Hillier (1989) in ‘The architecture of the urban object’ to conceptualise the space-society relationship within a theoretical framework which acknowledges the existence of generative social meaning from spatial arrangements. This section articulates the ways in which the historical study of spatial cultures fertilises new theoretical grounds and implications for defining alternative heritage values. The discussion unfolds the potential contribution of historical understanding of spatial cultures in proposing more ‘inclusive assessments’ (Veldpaus et al. 2013) of the heritages of spatial cultures. Building on Griffiths’s (2011, 2012) observation about the ‘hermeneutic possibilities’ that quantitative time-space descriptions produced by space syntax analysis generate in the study of history, the argument here extends this to the field of heritage studies and the assessment of cultural meanings in flux over time. In heritage studies, Harvey (2001, p. 320) proposes a relevant argument with regards to the study of ‘heritageisation as a process’, to bridge the study of history and heritage from an interdisciplinary theoretical viewpoint. Griffiths in this respect follows Harvey in identifying collaborative and inclusive liaisons across history, heritage and spatial studies.

Syntactic reading of spatial cultures is preoccupied with understanding the link between spatial configuration, spatial function and cultural meaning (Hillier 1989; Griffiths and von Lünen 2016). For Hillier and Hanson (1984, pp. 42-5), the mechanism through which this link becomes embodied for humans in space is a ‘description retrieval’ process: the abstraction of information relating to generic social meaning via the ways the social ‘encounter field’ is organised by space-time relations. In other words, the syntax of spatial descriptions relates to syntax of cultural meaning. Whereas these syntaxes have been examined in terms of synchronic relationships, they are yet underexplored in terms of their ‘temporal ontology’ (Griffiths 2011, p. 79). Synchronic understanding deals with the instantaneous relational aspects of a fixed spatial system at a fixed time, an ahistorical spatial configuration. By focusing on the temporality of spatial descriptions, Griffiths (2011) emphasises the diachronic aspects of spatial configurations and brings to the fore a core argument for spatial cultures: the spatiality of cultural phenomena cannot be fully understood if distanced from historical context and processes of cultural formation. These processes involve tracing continuities, disruptions and changes on the ways societies are organised in space; but also interpreting the means by which immaterial meaning becomes mediated in and by the built world (*ibid.*, p. 76). The key question here is: *What does spatial history tell us in terms of assessment and definition of heritage values?*

The ‘interpretative act’ plays a key role in ‘description retrieval’ (Griffiths 2011, 2012) and bears constructive relevance to discussions of alternative heritage definitions which consider non-authorized heritage values (Stephenson 2008; Waterton and Smith 2010; Emerick 2014). Interpretation acknowledges an inherent subjectivity¹⁰ in the ways we identify spatially mediated cultural meaning—namely, it implies the *sociality* of the process of identity formation (Waterton and Smith 2010, p. 8). The ways of experiencing spatial cultures as everyday rituals (Lefebvre 1992), as normative spaces of ordinary life, depend on the integrated understanding of spatial, social and temporal contexts. In other words, to that extent that space remains an ‘invariant’ over time (a theoretical rather than an historical proposition), people and cultural habits will not. This means that the ‘uses of spatial cultures’ – to borrow Smith’s (2006) argument on the uses of heritage – are constantly shifting as result of temporal processes. This is similar to what Harvey (2001, p. 320) argues for heritage, suggesting that *‘heritage has always been with us and has always been produced by people according to their contemporary concerns and experiences’*.

Space syntax historical research on spatial cultures means understanding the continuity and change of spatial descriptions, and not only of space as physical object (Griffiths 2012). The focus in this approach is a study of the historical space-society relationship to develop knowledge on how space is lived. As Griffiths clarifies (*ibid.*), the intention is not only to achieve a prescriptive description of material aspects of spatial cultures, but also to develop an informed interpretation of historical evidence on the ways the material and immaterial interact at a place over time. Rather than taking on a reductionist approach to defining assets of conserved urban landscapes which is promoted by AHD (Gospodini 2004, p. 228), we may argue that the hermeneutic potential which is afforded by syntactic analysis of spatial cultures, can generate an integrative and inclusive framework for assessing urban heritage. Heritage urbanism syntax can serve as a conceptual framework and tool for studying the process of time-space generated cultural meaning by incorporating a multileveled understanding of both tangible and intangible cultural meanings.

From a heritage management perspective, the significance of understanding historical spatial cultures becomes most evident in the cases of a) ownership of heritage and b) heritage reconstruction. Questions of *heritage ownership and belonging* become renegotiated when merging value of the present with the value to the past and possible value to the future (Harvey 2001). The spatialisation and adaptability of migrant urban cultures are an example where space syntax has actively contributed in overturning existing misconceptions of loss of cultural identity (Kershen and Vaughan 2013; Vaughan 2015; Vaughan and Sailer 2017). Also, the work of Nadia Charalambous (Charalambous and Peristianis 2002; Charalambous 2004) on urban spaces of political conflict suggests how the integration of social and spatial concepts, ‘humanistic and technical’ viewpoints, can provide new tools for the interpretation and conservation of cultural heritage (Charalambous 2007). The second strand of *reconstructing heritage* refers to studies which could deploy the study of historical spatial cultures to inform space reconstruction projects after the occurrence of disasters. The application of space syntax tools in Disaster Risk Management (DRM) practice is a heavily underexplored area. There exist a small

¹⁰ Discussing research practice in the field of comparative urbanism, Nijman (2007, p. 5) argues that *“we must acknowledge the shortcomings of previous comparativist schemes and the emergence of an “interpretative social science,” one that emphasizes understanding rather than law-like explanation.”*

number of studies which use syntactic analysis as disaster risk preventive tool (c.f. Gil and Steinbach 2008; Esposito and Di Pinto 2015; Maureira and Karimi 2017), but the prospects of using space syntax as reconstructive framework for *resilient* spatial cultures has not been tested yet. The potential role of cultural heritage in the delivery of a turquoise agenda (Lizarralde et al. 2015) is at the forefront of heritage management discourse (Jigyasu et al. 2013) and the study of spatial heritage against sustainability goals is a promising acting ground for space syntax researchers of spatial history.

5. Conclusion

This chapter argued that there is substantial scope in heritage studies for the application of syntactic analysis. Building on Griffiths's account of studies of history within space syntax (2012), the chapter frames a starting point for the integration of space syntax, history and heritage studies by identifying three core areas of future research activity: conservation areas, street scales, and spatial cultures. Throughout the chapter, the discussion made explicit links to contemporary policy priorities (such as urban regeneration, sustainability, resilience and DRM).

In a concluding note, the development of 'heritage urbanism syntax' requires multi-disciplinary affiliation. In space syntax perspective, the challenge is to identify analytical methods tailored to address the history-heritage relationship in order to systematise, without compromising, the hermeneutic potential of syntactic description. Overall, what the space syntax field may add to heritage urbanism is to address the question of the historical role of space in the formation of present and future spatial cultures which are sustainable, inclusive and resilient.

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