



Social syntax: An approach to spatial modification through the reworking of space syntax for archaeological applications



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ABSTRACT

Space syntax provides an approach to architecture that allows for the interpretation of social organization. However, many researchers who attempt archaeological applications have commented on the framework's inability to provide novel insights on spatial patterns, particularly in areas without an explicit and established social hierarchy. Many of the noted problems are tied to the absence of a consideration of the relationships among the intentions of builders, the lived experiences of occupants, and the impact of alterations to architecture. To address these issues, space syntax is reworked to focus on modifications to space through a combination of insights derived from practice theory and the life history/object biography approaches. Entitled social syntax, this framework integrates the useful graphic representations of space syntax with a focus on room life histories/biographies and a consideration of the dialectical interplay between architecture (structure) and occupants (agents). To illustrate the utility of this framework, it is applied to two room blocks from Homol'ovi I, an ancestral Hopi village in northeastern Arizona. This application highlights the strength and flexibility of social syntax as a framework for archaeological analyses focused on understanding how the use and meaning of architectural space develops throughout village occupation and depopulation.

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1. Introduction

Space syntax as developed by Hillier and Hanson (1984) uses spatial order inferred from access patterns to decipher social order. This approach has been drawn upon frequently to understand the archaeological record over the past three decades (e.g. Bradley, 1993; Brusasco, 2004; Bustard, 1996; Cooper, 1995; Ferguson, 1996; Fisher, 2009; Gann, 2003; Letesson, 2012; Moore, 1996; Osborne, 2012; Paliou et al., 2014; Shapiro, 2005; Van Dyke, 1999). Despite its broad popularity, many researchers have been frustrated by a number of issues and oversights inherent to the approach (e.g., Bustard, 1996; Ferguson, 1996; Gann, 2003; Shapiro, 2005; Van Dyke, 1999). While applications of this framework continue to be popular and productive in certain parts of the world, particularly in contexts with clearly identifiable social hierarchies (e.g., Fisher, 2009; Letesson, 2012; Osborne, 2012; Paliou et al., 2014), space syntax has fallen out of favor with archaeologists working in the Americas over the past decade (although notable exceptions exist in regions with clearly established social hierarchies, such as Parmington's (2011) study of a Classic Maya

city). Ferguson (1996), who used this approach to analyze an historic Zuni village, summarized several of the issues with archaeological applications of space syntax as follows,

Space syntax as *currently* developed cannot fully work unless something is already known of the relevant social structure and the observed patterns of spatial arrangement can be related to known social structure in retrospect. Ultimately, however, this does not need to remain the case. By combining analyses of space syntax with more conventional means of reaching archaeological inferences about social structure, and by building a large set of ethnographic and archaeological case studies to provide benchmarks about congruence in architectural and social structures, the additional method and theory that is needed can be developed so that the approach can reach its potential in archaeological research. (1996:149)

Despite being critical of aspects of space syntax, Ferguson (1996) remained optimistic about its potential utility for archaeology.

Research frameworks are meant to provide the most compelling inferences about the archaeological record. Often this goal is best achieved through the combination of components from multiple theories and methodologies (Fogelin, 2007). Most of the applications over the past decade noted above have in fact

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included additional knowledge within the space syntax framework in their research. In this paper, I incorporate aspects of practice theory and the object biography and life history approaches with space syntax to more fully address use of space over time and the development of social meaning with/within rooms. These supplementary frameworks provide key missing pieces—additional consideration of context and temporal trends—necessary to investigate the complex links among architecture, architects, and occupants.

2. Space syntax

Space syntax produces measures of site and structure layout that can be used to assess changes across space and time. Although other researchers had proposed similar types of analyses (Dickens, 1977), Hillier and Hanson (1984) formally developed space syntax in association with the Unit for Architectural Studies at University College, London (Hillier and Leaman, 1973, 1976; Hillier et al., 1976). They believed a theory of space needed to possess three characteristics (1984:5): (1) descriptive autonomy, (2) the ability to account for a wide range of variability in site type and layout, and (3) the allowance for varying relationships between spatial and social order. Space syntax met these criteria.

The core of this theoretical framework is the impact of spatial layout on social interactions; specifically, space syntax proposes a relationship between settlement form and social forces (Hillier and Hanson, 1984:82–83). This is a response to the creation of differentiation at two levels. The first is between insiders and outsiders, and the second is between social groups within a community (1984:15). While the basic principles of space syntax align themselves closely with earlier architectural studies, this approach deviates from alternative theories due to the reliance on the creation of a semiotic understanding of space. Hillier and Hanson (1984:48) believe in the existence of a form of morphic language in architecture. This language involves many parts, including an open space that holds or “carries” the architecture, a growth process to account for construction, and a syntax made up of the relations between units that determine the use of that space (1984:152–153). As such, the framework is entirely relational, both in terms of architecture and society. Access patterns are highlighted rather than individual structures; thus, permeability and boundaries serve as the cornerstones of analysis (1984:54–55). As this is based on a morphic language, there are inherent restrictions—a limited number of morphemes—that dictate the construction of space (Hillier and Hanson, 1984:80). In other words, there are only so many ways two rooms can be related horizontally and vertically.

A key component of space syntax is the creation of a graphic representation of architectural space, which depends on the existence of patterns in architecture. The construction of these graphics display rooms or sites as nodes, which are connected to one another based on lines of access. There are several representational forms that can be used to display space at the site or structure level (1984:97–148). Relationships among spaces are often justified, producing j-graphs that align spaces based on their depth from an exterior node or carrier (1984:149). These representations allow for the assessment of additional spatial qualities, such as the presence or absence of symmetry and distribution (1984:93–97). Symmetry implies equal connections between spaces, whereas asymmetry occurs when access to space requires passage through other rooms (Fig. 1). Alternatively, distributed areas indicate the existence of multiple paths between nodes, while nondistributed areas contain only a single access path. These different spatial relationships can then be linked to forms of social organization (1984:97); in this example, symmetry represents integration,

while asymmetry demonstrates segregation, and distributed systems indicate diffused social control, while nondistributed systems imply central control.

Applications of space syntax to archaeological contexts revealed four central criticisms of the framework. First, results from space syntax applications are made meaningful only through comparative interpretation and risk obscuring culturally specific views of the proper division and meaning of space (Leach, 1978; Parker Pearson and Richards, 1994). Thus, the symbolic and meaningful aspects of architecture and spatial arrangements are likely to be overlooked when reduced to this graphic medium (Osborne, 2012:46). Second, additional contextual information pertaining to architecture and the use of space is ignored by the exclusive focus on access patterns, which encompass a very narrow breadth of the available data (Ferguson, 1996; Leach, 1978). The third issue concerns the importance of understanding the relationships among different actors in the construction and use of architecture (Lefebvre, 1992; Smith, 2003). Specifically, who is building and organizing a space versus who is occupying and using it? In some contexts, individuals or families may hire builders (e.g. Fisher, 2014), while elsewhere architecture was more likely to be constructed communally (e.g. Bagwell, 2006). These issues are tied closely to cultural standards and expectations; power relationships may be clearly expressed through space syntax in regions with clear hierarchical divisions and a large degree of spatial independence among social groups, whereas understanding power dynamics within this framework is problematic for applications to agglomerated architecture where social groups are spatially interdependent and status differences are expressed more subtly. Finally, Batty (1985) critiqued space syntax for its inability to reflect the change, decline, or decay of social order. While space may reflect residents' needs initially, social groups can change rapidly and, thus, spatial and social orders can quickly become disjointed (see also Goody, 1971). Space syntax provides a clear framework for examining those changes when they involve a concurrent alteration to the architectural layout and impact access patterns (e.g., Brusasco, 2004) but cannot in its present form address other types of spatial modifications, particularly as rooms cease to be used and buildings are depopulated. While these concerns may be less important to contemporary applications of the theory where the makeup of social groups is known, attempts to use space syntax to understand the past compound the potential impact of these weaknesses on interpretation.

3. Theoretical adjustments

Despite concerns with the limitations of space syntax, it provides valuable insights on the relationships between people and space. Combining aspects of the life history/object biography approaches and practice theory can ameliorate several of the noted problems with the original framework. The life history and object biography approaches, while similar, derive from distinctive schools of thought. (While not discussed in detail here, the concept of *chaînes opératoires* (Hodder, 2011; Lemoïnier, 1993) also provides a related framework to understand the various stages of an object's production, use, and discard.) As an important component of Behavioral Archaeology, the life history approach developed to understand the creation, use, and discard stages that artifacts undergo (LaMotta and Schiffer, 1999, 2001, 2005; Schiffer, 1987; Walker, 1995a,b), whereas biographies of objects were developed in association with studies of materiality to understand the ways objects accumulate meaning (Appadurai, 1986; Gosden and Marshall, 2010; Kopytoff, 1986). When applied to architecture, life history approaches involve the study of four main aspects of a room and its contents; these are the physical properties of the

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