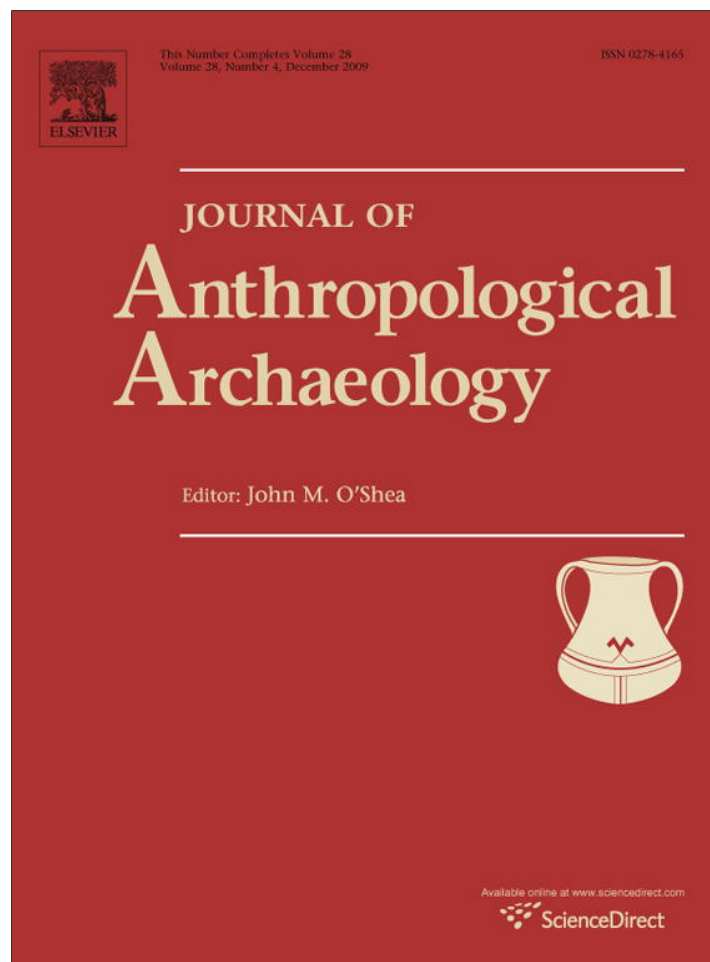




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Placing social interaction: An integrative approach to analyzing past built environments

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ABSTRACT

A growing recognition of the vital role that built space plays in social reproduction has created a need for analytical methods and interpretive frameworks with which to investigate this relationship in archaeological datasets. I address this by developing an integrative approach that emphasizes the role of the built environment as the context for interactions through which social structures are created, transformed and reproduced. This approach uses access analysis to examine how buildings structure patterns of movement and encounter that allow social actors to engage in or avoid particular forms of interaction. With its focus on the topological properties of built space, however, access analysis does not take adequate account of a building's symbolic aspects, especially architectural characteristics and furnishings that social actors mobilize in the creation of meaningful contexts for interaction. I therefore integrate access analysis with an examination of how built environments encode meanings and nonverbally communicate them to inhabitants and visitors, potentially influencing their actions and interactions. The integrative approach allows determination of probable contexts for various types of social interactions during which social identities could be displayed, negotiated and reified. I conclude by demonstrating the potential of this approach with an analysis of the monumental Ashlar Building from the Late Bronze Age (c. 1650–1100 BC) site of Enkomi, Cyprus.

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Introduction

Scholars in a number of fields have come to recognize the vital importance of the built environment to the social lives of people. By turning contiguous space into discrete but interconnected units, buildings structure patterns of movement and encounter and therefore directly influence social relations. Archaeologists interested in this area of research, however, are often challenged by fragmentary remains that may be preserved as little more than foundations. This problem is exacerbated in prehistoric settings where documentary evidence regarding the use of buildings is unavailable. As a result, there is a pressing need for analytical methods and interpretive frameworks that enable archaeologists to examine the social role of buildings. One of the most widely used of these is access analysis, which provides a way to determine how accessible each of a building's constituent spaces are, and therefore which spaces might be more likely to host social interaction. In giving primacy to the topological properties of spaces, however, access analysis fails to take into account various symbolic and geometric properties that are at least equally important in determining the location and nature of social interactions.

In what follows, I outline an approach to studying ancient architecture that builds on the strengths of access analysis while addressing its limitations by integrating it with other analytical methods. This *integrative approach* offers insight into the social dynamics of ancient societies by examining built space as the context of social interactions. It combines access analysis with a focus on how architecture encodes and communicates meanings that can be perceived by social actors, potentially influencing their actions and interactions. I demonstrate the effectiveness of the integrative approach by applying it to an analysis of the monumental Ashlar Building from the Late Bronze Age (c. 1650–1100 BC) site of Enkomi on the eastern Mediterranean island of Cyprus.

The built environment, interaction and social (re)production

A number of prominent social theorists have examined the important role that space in general and buildings in particular play in social reproduction (e.g., Bourdieu 1973, 1977; Foucault, 1977; Giddens, 1984; Lefebvre, 1991 [1974]). Anthony Giddens has been particularly influential in this regard, and is often cited by those who take an agent-centered approach to understanding the reciprocal influences of architecture, actors and social structures, whether ancient or modern (e.g., Ferguson, 1996; Gieryn, 2002; Grahame, 2000). Giddens's (1976, 1979, 1984) theory of

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structuration retains the linkage between routine actions and social reproduction developed by Bourdieu and others but, unlike the unconscious operation of Bourdieu's *habitus*, it is instead based on the assumption that human beings are knowledgeable agents who understand the conditions and consequences of their actions. Structuration theory highlights the recursive nature of social life, expressed as a “duality of structure”, in which the structural properties of social systems are both the medium and the outcome of the social practices that they organize (Giddens 1984, p. 25). A central tenet of Giddens's work is that space is an integral part of social interaction. He introduces the concept of *locale*, which is more than simply a spatial parameter or physical environment, but is the use or mobilization of these elements in interaction (Giddens, 1984, p. 118). Giddens's work informs the overall approach taken here, in which architecture plays a central role in social reproduction by delineating physical and social boundaries and serving as the context for the social actions and interactions of knowledgeable agents.

Of particular importance to social reproduction are interactions in which the agents are co-present, or mutually aware of one another. In his discussion of the nature of social interaction, Giddens (1984) borrows heavily from the seminal work of Goffman (1963, pp. 18–24), who distinguishes between *gatherings* and *social occasions*. A gathering is any set of two or more individuals who are co-present. Gatherings therefore tend to have a loose and transitory form, such as fleeting glances or exchanges as people pass in a hallway. Social occasions, on the other hand, are wider events involving a plurality of individuals. They are usually specifically bounded in time and space and are often facilitated by the use of particular equipment or furnishings. Social occasions range from routine aspects of daily life, such as an office work-day or the preparation and consumption of food, to events such as funerals or weddings that are more irregular, formal and delineated in terms of their spatial and temporal boundaries and the composition of their participants.

As the context of these interactions, built space is more than just their backdrop or stage, but is an integral part of their occurrence and, by extension, the negotiation of social statuses, roles, and identities. But, how can we place social interaction in the archaeological remains of past built environments? While Giddens, Goffman and others provide an overall theoretical orientation for examining the relationship between architecture, interaction and social transformation, their work does not offer the tools needed to analyze the material remains on the ground. The integrative approach outlined below provides an interdisciplinary means of studying the social aspects of architecture from any region or chronological period.

Access analysis and social interaction

The first stage of this approach uses space syntax, a conceptual framework and set of analytical methods developed by Hillier and Hanson (1984; Hillier, 1996; Hanson, 1998) for the representation, quantification and interpretation of spatial configuration in built form. Space syntax is particularly well-suited to studying interaction because it is based on the premise that,

[b]y giving shape and form to our material world, architecture structures the system of space in which we live and move. In that it does so, it has a direct relation—rather than a merely symbolic one—to social life, since it provides the material pre-conditions for the patterns of movement, encounter and avoidance which are the material realisation—as well as sometimes the generator—of social relations (Hillier and Hanson, 1984, p. ix).

Although space syntax is essentially structuralist in orientation, this quotation reveals that Hillier and Hanson do share some theoretical ground with Giddens in seeing a recursive relationship between space and society. Much as syntax in language brings meaning to a string of words, Hillier and Hanson suggest that underlying rules or laws bring order and meaning (a “social logic”) to configured space. This order or logic manifests itself in the delimitation of spatial units (e.g., the arrangement of rooms in a building), which permits particular relationships of accessibility and visibility to develop among these units, creating probable movement and encounter patterns among the inhabitants of a building and between the inhabitants and those who enter as visitors. While some spaces in this arrangement will be highly accessible and more likely to promote social encounters, others will engender a higher degree of exclusion. In general terms, the depth at which an inhabitant situated and the degree to which visitors are allowed to penetrate into a structure are seen as indicators of their relative status (Dovey, 1999, p. 22). As Markus (1993, p. 13) notes, “[t]he *raison d'être* of the building is to interface the two groups and exclude strangers”. The investment in particular individuals or groups of control of movement into and out of certain spaces provides the opportunity for levels of responsibility, division of labor, and status hierarchies that are essential to social organization in complex societies (Bafna, 2003, p. 18). Hillier and Hanson have developed a number of analytical methods that can be used to investigate these aspects of built space.

Specifically, I employ a component of space syntax called convex spatial analysis or, more commonly, *access analysis* (see Hillier and Hanson, 1984, pp. 143–155; Hanson, 1998, pp. 22–38). This involves the representation of built space as a graph and can be applied to building interiors in order to gain an understanding of how each space is integrated with the rest of the spaces in the building. The basic unit of analysis is the “bounded space”, which is defined or enclosed by physical boundaries such as walls. It is preferable, however, to divide bounded spaces into convex spaces, which are the fewest and most square (“fattest”) spaces that can fit into a bounded space such that a straight line can be drawn between any two points within a convex space without passing through its boundary. The use of convex spaces better reflects spatial configuration and the realities of movement through complex or irregular bounded spaces (for example, the T-shaped hallway in the southwest corner of the Ashlar Building (see Fig. 5) is divided into several convex spaces: 34, 34w, 34x, 34a, 36a and 34z). In more ambiguous cases, the concept of co-presence can be used to determine spatial configuration: could a person be in one convex space and reasonably be unaware of the presence of others in an adjoining convex space? If so, the spaces should be separate (see Grahame, 2000, pp. 30–32 for a detailed discussion).

Each convex space is represented as a circle and relations of accessibility between these spaces are represented by line segments that link the circles (Fig. 1). The space outside the building (called the *carrier*) is represented by a circle with a cross and is always treated as a single space, regardless of how many entrances a building might have. The carrier is usually taken as the point of origin for the graph, although any space can be used. The access graph is most useful when it is justified, a procedure in which all spaces of the same depth (i.e., the number of spaces one must traverse in order to arrive in that space from the point of origin) are aligned in horizontal rows above the space of origin. Hillier and Hanson (1984, p. 149) liken this procedure to dissection, in which “the premises are ‘sliced’ down the middle and ‘pinned out’ so that their internal structure is visible”.

It is also possible to analyze accessibility using an axial map (Hillier and Hanson, 1984, pp. 90–142), which indicates the fewest and longest non-trivial lines of access through a system of

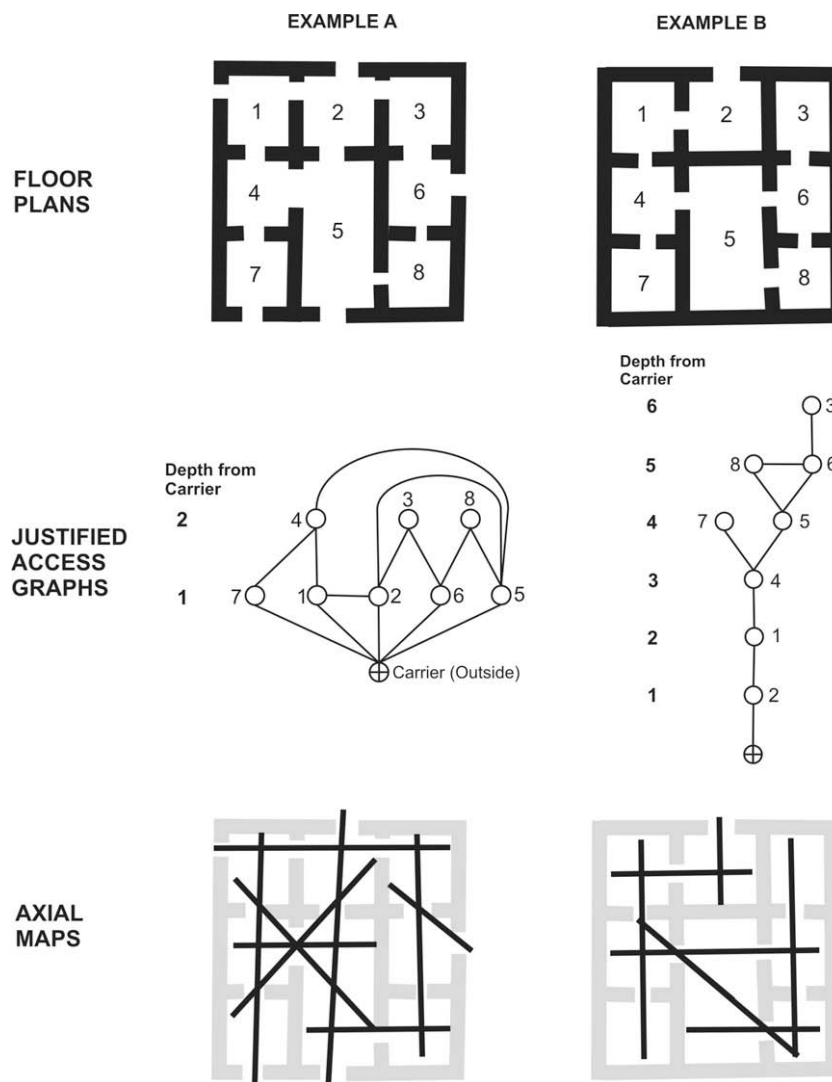


Fig. 1. Examples of access analysis (access graphs and axial maps) applied to two buildings with the same general form but different doorway placements.

convex spaces. A building's accessibility pattern can therefore be reduced to a set of intersecting axial lines that represents all major routes of circulation in a system (Fig. 1). While space syntax is not the only approach to use graphs to represent building layouts (e.g., Blanton, 1994; Dovey, 1999; Faulkner, 1963), it is the only one whose properties permit a more detailed and rigorous analysis through the quantification of the building's syntactic properties.

Using the access graph, one can calculate a number of variables, three of which are particularly important for the study of social interaction (see Hillier and Hanson, 1984, pp. 143–175). The *depth* of each space from the exterior, which is easily determined from the justified access graph, provides a general sense of how accessible a space is to visitors, offering insight into potential venues for visitor–inhabitant interaction. The *control value* (CV) is a measure of *local* relations: the degree of control a space exercises over its immediate neighbors. Each space in the building is assigned a value of 1, which is equally divided among each of the neighboring spaces to which it has direct access. These are then totaled for each space and the higher the number, the more control the space exerts over adjoining spaces. *Relative asymmetry* (RA) is a measure of how accessible a space is from any other space in the structure and is

therefore a measure of integration and *global* relations. To calculate it, one must first figure out the *mean depth* (MD), which measures how deep a space is relative to all the other spaces in the building. This is done by adding up the number of spaces at each depth from the space in question (i.e., the number of spaces that are immediately adjacent to the space in question; the number of spaces that require crossing two boundaries to reach them from the original space, and so on). The number of spaces at each depth is then multiplied by that depth. These totals are then added together and divided by the total number of spaces in the configuration minus one (the original space) to give the mean depth. Therefore,

$MD = \sum d_k / k - 1$, where $\sum d_k$ is the sum of the depth values for each of the k spaces, and k is the number of spaces in the configuration; and $RA = 2(MD - 1) / k - 2$ where k is the number of spaces in the configuration.

RA values are standardized to provide a value between 0 and 1 with a higher score indicating less accessibility or integration. While it is possible to compare RA values between buildings with a similar number of constituent spaces, it is necessary to convert them to *real relative asymmetry* (RRA) values in order to allow comparisons between buildings with significantly different numbers of spaces. This is achieved by dividing the RA value by its *D*-value (see

Hillier and Hanson, 1984, Table 3), a procedure that compensates for the fact that RA values get disproportionately smaller as the number of spaces in the configuration increases.¹

Cutting (2003) has, quite rightly, raised concerns regarding the indiscriminate use of the quantitative aspects of access analysis on archaeological datasets, especially in prehistoric contexts. Indeed, it is essential to have a reasonably complete building plan with clear entry locations before one attempts such an application. The lack of preserved upper stories in most buildings is also problematic, but can be alleviated by knowing which spaces connect with the upper story. In my own research (Fisher, 2007a), I have attempted to mitigate these concerns by clearly stating any assumptions regarding unknown or uncertain doorways and assigning them confidence levels based on congruencies among published plans, photos and excavator descriptions, first-hand observation at the site, and precedents from other parts of the building or elsewhere on site. Where multiple access points are equally probable or might alter the configuration significantly, I provide alternative access graphs and calculations that can be compared to see how the changes would affect the access patterns and syntactic measures. I suspect that many would-be users of space syntax are daunted by what can be a painstaking process of generating graphs and measures and, unfortunately, revert simply to using the access graphs as a “tool to think with” (Cutting, 2003). Yet, if the architectural data are sufficiently robust, the quantification process is well worth the effort.

Combined, the syntactic measures of control, integration and depth can be used to determine which rooms are most significant in structuring space within a building, providing insight into potential locations for particular types of social interaction. This is especially useful in large complexes, such as the Ashlar Building at Enkomi, where spatial configuration is not readily understood and quantification might reveal more subtle variations in control and integration among spaces than is apparent from the access graph alone. According to Byrd (1994, p. 644), the utility of access analysis is that the organization of spaces is depicted independently of their size or shape, providing insight into the rules and processes that generated their plans. That is to say, space syntax reveals the *topological* properties of space—the layout of spaces irrespective of their size or shape, ignoring all properties except adjacency and access. Furthermore, the various quantitative indices of space syntax allow one to move beyond mere insight into the spatial topology of a building toward an understanding of the systemic properties of this topology (Grahame, 2000, p. 32). Space syntax analysis in modern contexts has demonstrated that integration measures are often quite closely related to observed movement by both pedestrians and drivers (Penn, 2003, p. 31; Peponis and Wineman, 2002, pp. 277–283). These various syntactic properties are essential to understanding the patterns of movement and encounter through which social interaction is sustained and they have made access analysis attractive to archaeologists who want to draw information on social behavior from the often scant remains of walls and doorways.

While by no means *de rigueur* in archaeological studies of architecture, the use of space syntax is becoming increasingly common. Since the 1990s, it has been successfully applied to a number of chronologically and geographically diverse data sets, including pueblos of the American Southwest (Bustard, 1999; Ferguson, 1996; van Dyke, 1999), the monumental architecture of the ancient Andes (Moore, 1996), the Neolithic and Bronze Age architecture of

the Near East (Banning, 1996, 1997; Brusasco, 2004; Cutting, 2003; Düring, 2001), the ruins of the Roman city of Pompeii (Grahame, 2000; Laurence, 1994) and the castles and manors of medieval Europe (Fairclough, 1992; Richardson, 2003). Such research highlights the potential for access analysis to provide insight into various aspects of social behavior. Many of the studies shed light on the way in which social organization is embodied in spatial configuration. In particular, a number of cases demonstrate the important role that the control of movement and accessibility has in mediating relationships of power and inequality. For example, Richardson's application of access analysis to the Bishop's Palace in Salisbury, England, highlights how the changing spatial configuration of this building from the 13th through 15th centuries reflects the growing social pre-eminence of the bishop and the “architectural manifestation of a hegemonic masculinity” that characterized seigneurial society (Richardson, 2003, p. 382). While access analysis has proven effective in these avenues of inquiry, I would argue that it also has significant drawbacks that limit its potential to provide a more complete picture of social interaction in ancient buildings.

In spite of its growing acceptance and use, space syntax analysis has not been without its detractors. While some have criticized its methods as highly codified and mechanistic (Lawrence, 1987, p. 48) and unable to take into account the complexities of ‘real’ situations (Leach, 1978, p. 400), others have raised concerns about its theoretical underpinnings. Hodder (1991, pp. 39–41) and others (e.g., Parker Pearson and Richards, 1994, p. 30; Taylor 2002, p. 441) have argued that space syntax fails to account adequately for the symbolism and meaning of built environments. Indeed, it would seem that space syntax is perhaps better suited to studying *space*, the physicality of a context, than *place*, the socially constructed and meaningful context of human interaction and experience. This is highlighted by a recent article discussing the basic principles of space syntax, in which Bafna (2003, p. 19) contends that the sociologically relevant aspects of buildings can be captured at the level of topological description. Therein lies the problem: by giving the topology of built space “privileged explanatory status”, (Boast and Steadman, 1987, p. 360) space syntax strips away vital architectural and artifactual elements that are mobilized by social actors in the creation and use of meaningful contexts of interaction.

Research in environmental psychology over the last half-century has generated a vast body of data that convincingly demonstrates the important influence on human behavior and interaction played by room size and shape as well as the presence and characteristics of various architectural materials, features and furnishings (e.g., Bechtel and Churchman, 2002; Gutman, 1972; Stokols and Altman, 1987; see Fisher, 2007a, ch. 3 for a summary). Edward Hall's (1966) pioneering work in proxemics, the study of people's use of space as an aspect of culture, is especially significant for drawing attention to the relationship between interpersonal spacing and human sensory perception during social interaction. Based on his observations of several cultural groups, he concluded that there are four distinct distances, ranging through intimate, personal, social, and public, at which various types of interaction take place (Hall, 1966; see Table 1). While subsequent work has questioned the precision of his zonal measurements and pointed out the need to take into account various social and environmental factors that modify proxemic distances (e.g., Altman, 1975), a large body of research has generally supported Hall's qualitative observations (see reviews by Altman and Vinsel, 1978; Aiello and Thompson, 1980). Clearly, room size and shape have a role in influencing proxemics, limiting the number of possible participants in social interaction and the potential distances between them. In removing the geometrical properties of space, access analysis fails to consider the significant effects of these properties on social interaction.

¹ This effect occurs because the number of spaces in the configuration (k) is the basis of the denominator in the RA formula. Without the transformation proposed by Hillier and Hanson, when comparing larger building configurations to those with fewer spaces, it would appear that the spaces in the larger configuration would have, on average, lower RA values, even though this is intuitively incorrect.

Table 1

Proxemic distances and corresponding effects on perception (based on Hall, 1966, pp. 116–129).

Proxemic threshold	Intimate	Personal	Social (near phase)	Social (far phase)	Public (near phase)	Public (far phase)
Distance	0–0.45 m	>0.45–1.2 m	>1.2–2.15 m	>2.15–3.65 m	>3.65–7.6 m	>7.6 m
Touch	Can touch easily; accidental contact is possible	Can reach out and grasp extremity at near phase; cannot touch beyond c. 0.75 m	Two people can pass an object back and forth by both stretching (up to c. 3 m).			
Oral/aural	Soft voice; intimate style		Conventional modified voice; casual or consultive style		Loud voice used when speaking to group	Full public-speaking voice; frozen style
Detailed vision (foveal)	Details of eyes, pores on face, finest hairs visible; vision can be distorted or blurred	Details of face clearly visible	Can see head hair clearly; wear on clothing apparent	Fine lines of face fade; lip movement seen clearly	Eye color not discernable; smile vs. scowl visible	Difficult to see eyes or subtle expressions
60° Scanning vision	1/3 of face; some distortion	Takes in upper body	Upper body and gestures	Whole seated body visible		Whole body has space around it in viewshed; postural communication becomes important
200° Peripheral vision	Head against background visible	Head and shoulders visible	Whole body visible	Other people seen if present		Other people become important in vision

Access analysis also eliminates the decorative and stylistic elements of architecture and the various features and artifacts that play an important role in shaping social interaction (see Boast, 1987, pp. 452–454). To use examples based on the Late Bronze Age case study below, it fails to distinguish a formal hall constructed of elaborate cut-stone (ashlar) masonry from a room made of mudbrick, or whether the room contains a formal hearth, well or bench—features that might serve as focal points for particular types of interaction and provide insight into a space's function. While access analysis is based on the connection of spaces, it does not consider the physical nature of the connection itself, including the presence or absence of a formally constructed doorway, the width of the opening, the presence or absence of a door or elaborate threshold—all of which affect the nature of accessibility between spaces. Studies in environmental psychology indicate that these elements of the built environment play an important role in the delineation of human territories that reflect the duration of occupancy and the psychological centrality of spaces to people's lives (Altman, 1975). Occupants mark these territories in different ways in order to convey verbal and nonverbal messages of ownership or control as well as other social information related to display and identity (Brown, 1987). Indeed, the most important function of the various elements of the built environment is the encoding of such messages or meanings that are meant to convey social information and inculcate “proper” or desired behaviors in a given context of interaction. This raises the question of how the built environment can encode meanings that affect human behavior and interaction. Rapoport's (1990) nonverbal communication approach to studying meaning in the built environment helps to address this issue and serves as a framework for the second stage of the integrative approach.

Buildings and the nonverbal communication of meaning

Nonverbal communication is, in a general sense, communication effected by means other than words (Knapp and Hall, 2002, p. 5). It is produced not only by active human behavior, as seen in proxemics and kinesics (Birdwhistell, 1970), but also by material behavior such as the spatial arrangement of architecture (Fletcher, 1989, p. 33). Rapoport's (1988, 1990) environment–behavior research represents the most comprehensive attempt to apply nonverbal communication to architecture and is based on the

premise that built forms are created to provide cues to users that inform them of proper or expected behavior. Cues are an integral part of contexts for interaction, letting people know which type of context they are in, including “*who does what, where, when, how, and including or excluding whom*” (Rapoport, 1990, p. 59; italics in original). In general conceptual terms, cues inform people as to whether a context is public or private, high or low in status, male or female, formal or casual. In more specific terms, these cues indicate whether one is in a bedroom or living room, an upscale restaurant or neighborhood eatery.

Rapoport (1990, p. 60–62) suggests that people act toward objects (as well as other people) in terms of the meanings that the objects have for them, and that these meanings are not intrinsic but are interpreted through the process of social interaction. The meanings are not constructed *de novo* in each case, but, once learned, become norms that operate semi-automatically. Social organization and culture provide a fixed set of cues—verbal, nonverbal and material, including those embodied in the built environment—that people use to interpret situations and help them to act appropriately. Because nonverbal meanings, unlike their verbal counterparts, do not always have a clearly articulated set of syntactic rules, understanding them requires a greater degree of inference and ambiguities can arise (Rapoport, 1988, p. 321). A redundancy of cues is therefore needed to ensure comprehension and the non-stressful pursuit of everyday life (Sanders, 1990, p. 71). Rapoport (1990, p. 81) argues that anxiety is generated in an individual when he or she must choose a course of action in the absence of sufficient information on which to base a decision. By suggesting similar, and limited, ranges of behavior, redundant cues help to prevent purely idiosyncratic interpretations, responses, and behaviors that would make social communication and interaction difficult, if not impossible (Rapoport, 1990, p. 81). In this manner, the built environment plays a fundamental role in the routinizing of behavior. These aspects of nonverbal communication fit well with Giddens's (1984, p. 375) work, which has demonstrated the importance of ontological security founded on predictable routines and encounters in day-to-day social life. In addition, the redundancy of cues makes them more likely to be detectable in archaeological contexts and increases the likelihood of successfully determining the intended meaning(s).

It is clear from the foregoing discussion that the built environment can be seen, at least on one level, as a system for encoding information that the users must then decode. Rapoport (1990,

Fig. 17) has developed a model of this process on the basis of earlier work in nonverbal communication by Ekman (1977). Referring to Fig. 2, the process begins with elicitors: those meanings, including identity, power and status, which are to be encoded in built form. From a number of possible physical elements, such as size, height, color, materials, and decoration, and social elements, such as people and their activities, a particular combination of elements is selected and filtered through various display rules. While there is some cultural variability in the palette of elements, many elements are almost universally recognized, such as the use of height to symbolize importance and high status, or the meanings attached cross-culturally to black, white, and certain colors (Rapoport, 1990, pp. 106–121). The display rules, which tend to be more culturally variable, provide parameters by which an appropriate combination of physical and social elements is determined in order to encode desired meanings. These elements are then incorporated (or encoded) into the built environment, creating contexts that have particular cues to inform users of appropriate behavior and interaction. Cues are typically perceived visually, although auditory, tactile, olfactory and other senses may also come into play. Upon reception, the meanings are decoded and the success of this process, or the degree to which the meanings are understood, depends on the enculturation or acculturation of the receiver and their ability to comprehend the environmental cues. As noted above, this process sometimes operates almost semi-automatically, although, even if the cues are understood, the receiver must also be willing to heed them. It is important to stress that, while various sanctions may enforce environmental constraints (Rapoport, 1990, p. 62), individuals or groups in particular instances might be unwilling to obey established cues, causing disruption to accepted routines that might eventually lead to wider social change. If the cues are understood and obeyed, then expected or “appropriate” behavior or interaction will occur.

Rapoport (1990, pp. 87–101) isolates three elements of the built environment that encode and communicate messages. *Fixed-feature* elements are relatively permanent architectural components integral to a building's structure, including walls and floors. *Semifixed-feature* elements are more easily changeable and include various furnishings and portable artifacts, while *nonfixed-feature* elements include the physical and verbal expressions of the building's occupants and users, including their language, clothing and accessories. These elements can combine, according to display rules, to convey a variety of social information. Rapoport (1988, p. 323) asserts that the semifixed-feature elements are the most important for communicating meaning and therefore influencing behavior. This stands in contrast to the view of Bafna (2003) and other advocates of space syntax, outlined above, in which spatial

organization (as represented by fixed-feature elements) is more vital to understanding social interaction. I would argue, rather, that both fixed-feature and semifixed-feature elements play essential and interrelated roles in the creation of contexts of interaction.

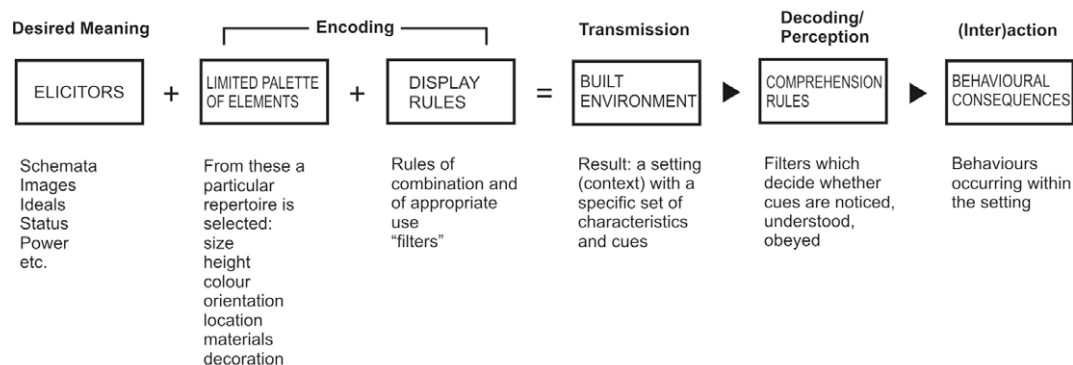
With few exceptions, it is typically the fixed and semifixed-feature elements that are directly attested in the archaeological record. Implementing this stage of the integrative approach involves recording various cues that might affect social interaction. Although some of these cues can only be recorded by their presence or absence, many have dimensions or properties that lend themselves to quantification. These cues can be divided into a few categories.

Geometric characteristics of spaces

The size of a space is an important factor in determining the types of interaction that could potentially occur within it and its dimensions and area are easily calculated from state plans or direct observation. While the area of the space is significant, it is also necessary to consider the shape of a space, since long, narrow corridors will promote different types of interaction than a large square room. *Relative convexity* is a measure of “squareness” and is determined by dividing the width of a space by its length (Grahame, 2000, pp. 56–57). A result of 1 indicates a perfect square, while measures approaching zero indicate an increasingly long and narrow rectangular space. As noted above, the size and shape of a room also directly affect the types of social interaction that can take place at various proxemic thresholds (Hall, 1966; see Table 1). Typically, few spaces can accommodate interactions at the far range of Hall's public distances, while other spaces were clearly intended for more intimate social interactions. It is therefore important to record the types of proxemic interactions that each space in a building could potentially accommodate.

Room capacity

Since these spaces are contexts in which people interact, it is important to have an estimate of how many individuals they could accommodate. While it is all but impossible to know exactly how many people participated in a given social occasion, one can at least suggest a maximum possible number of participants. Obviously, a room's capacity is a function of its area, and I calculate maximum occupancy based on modern architectural standards for density of people seated on benches or chairs (1.9 persons/m²) and standing in a group situation of “normal spacing” (3.4 persons/m²) (Neufert and Neufert, 2000, pp. 16–17; see Fisher, 2007a, pp. 101–102).



All elements are culturally variable, but 'Palette of Elements' may be the least variable.

Fig. 2. A nonverbal communication approach to the built environment (adapted from Rapoport, 1990, Fig. 17).

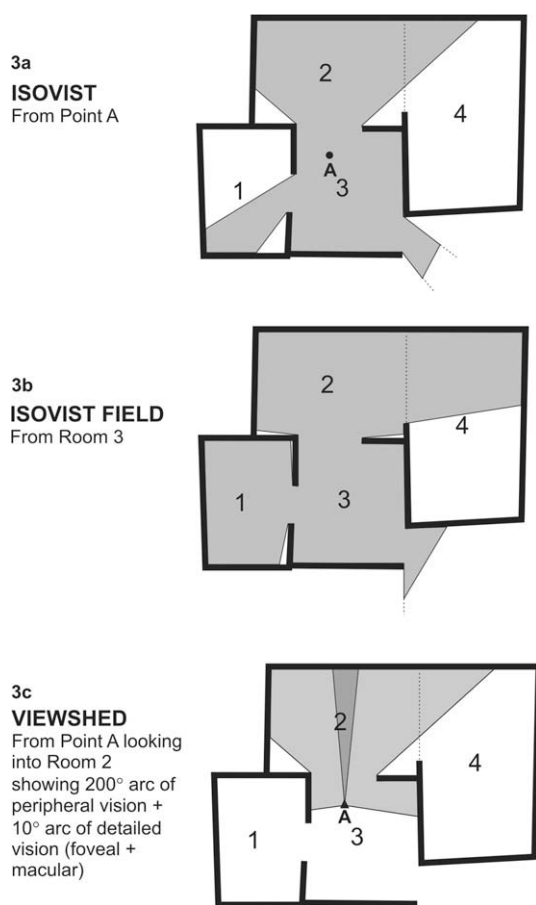


Fig. 3. Examples of an isovist, isovist field and viewshed.

Characteristics of Walls

Characteristics such as room size and shape largely depend on the placement of walls. While their position determines the topological structure of a building, walls are also vitally important for the meanings they encode in their materials and decorative embellishment. My research demonstrates that, in Late Bronze Age Cyprus, walls in sociopolitically or ideologically important contexts were often embellished through the strategic use of ashlar (cut-stone) masonry. Even within many structures containing ashlar masonry, it is only used in particular areas, and there are different styles of ashlar present within certain areas of some buildings. I have argued that stone walls were not only symbolic of elite control over natural and human resources, but also embodied a permanence that elites undoubtedly used to communicate (in their view) the immutability of the social order and its inherent inequalities (Fisher, 2007a, pp. 256–259). More than simply a prestige symbol, ashlar masonry was an integral part of the identities of urban Cypriot elites during the Late Cypriot IIC–IIIA periods (c. 1340–1100 BC). In order to assess the significance of this, it is necessary to assign a masonry type to each length of wall in the building in question. In my own research, each masonry type is assigned an “elaboration multiplier” based on such factors as block size, arrangement of courses, and the presence of labor-intensive elaborations such as drafted margins. It is then possible to derive the *ashlar elaboration score* by dividing the length of wall constructed of each type of masonry (whether ashlar or non-ashlar) by the total wall length of the room’s interior, and then multiplying this by the elaboration multiplier. The results for each type of masonry are added, yielding a measure between 0 and 1 that indicates how

elaborate the masonry is in the room in question (see Fisher, 2007a, pp. 102–103).

Characteristics of doorways

Like walls, doorways have significance beyond their topological function. The liminal character of doorways as boundaries or transitional spaces between domains such as outside/inside, sacred/profane, public/private or elite/non-elite has frequently been noted (Lang, 1985; Parker Pearson and Richards, 1994, pp. 24–29). In his cross-cultural study of houses and households, Blanton (1994) demonstrates that members of strongly integrated social entities tend to demarcate boundaries between themselves and other social entities with material communication in the form of decorative elaboration. To examine these phenomena, one can record a number of possible cues. Whether or not the opening between two spaces is a purpose-built doorway or simply an opening at the end of the hall, speaks to the intent of the occupants regarding the nature of access between the spaces in question. The width of doorways and openings, including the total and mean widths of all of a space’s openings are important indicators of the ease of movement between spaces. My own observations suggest that an average-sized adult can pass through an unobstructed doorway as narrow as 0.6 m without great difficulty. Openings smaller than this, however, might require one to turn his or her body to one side to gain entry. Given the importance of doorway width to accessibility, it is useful to encode this information on the access graph by altering the thickness of connecting lines such that wider doorways are represented by thicker lines (see Fig. 6).

The architectural characteristics of a doorway are also significant, including the material of which the doorway is constructed and the presence or absence of a door or similar barrier. In some cases, jambs or orthostats of flanking slabs made of a different material may be placed at doorway to mark the significance of transition between different types of spaces. A purpose-built threshold or step might serve the same purpose. While doors were typically made from perishable materials, it is often possible to infer their existence by the presence of rabbets cut to accommodate a wooden doorframe, or the use of pivot stones or holes cut into thresholds. Based on these observations, it is possible to calculate an elaboration score for each doorway by adding up the number of these embellishments.

Other fixed-feature elements

I also record the general characteristics (dimensions, construction material, etc.) of other architectural elements and features that are often preserved in archaeological contexts, such as floors, pillars, hearths, wells, benches, platforms and toilets. The presence and arrangement of such features contribute to the creation of a context suitable for particular types of interaction. These fixed-feature elements can be integrated graphically with access analysis by using appropriate symbols on the building’s access graph. Furthermore, one can shade the various cells to indicate, in general terms, their RRA, ashlar elaboration score, or any other relevant measures. These enhancements to the typical access graph present a much clearer picture of the relationship between a building’s syntactic and architectural properties, without diminishing its clarity (for example, see Fig. 6).

Semifixed-feature elements

Although fixed-feature elements communicate meaning through their size, location, and the way in which they are organized, they are almost always supplemented by semifixed-feature elements (Rapoport, 1990, p. 88). Rapoport (1990, pp. 90–91)

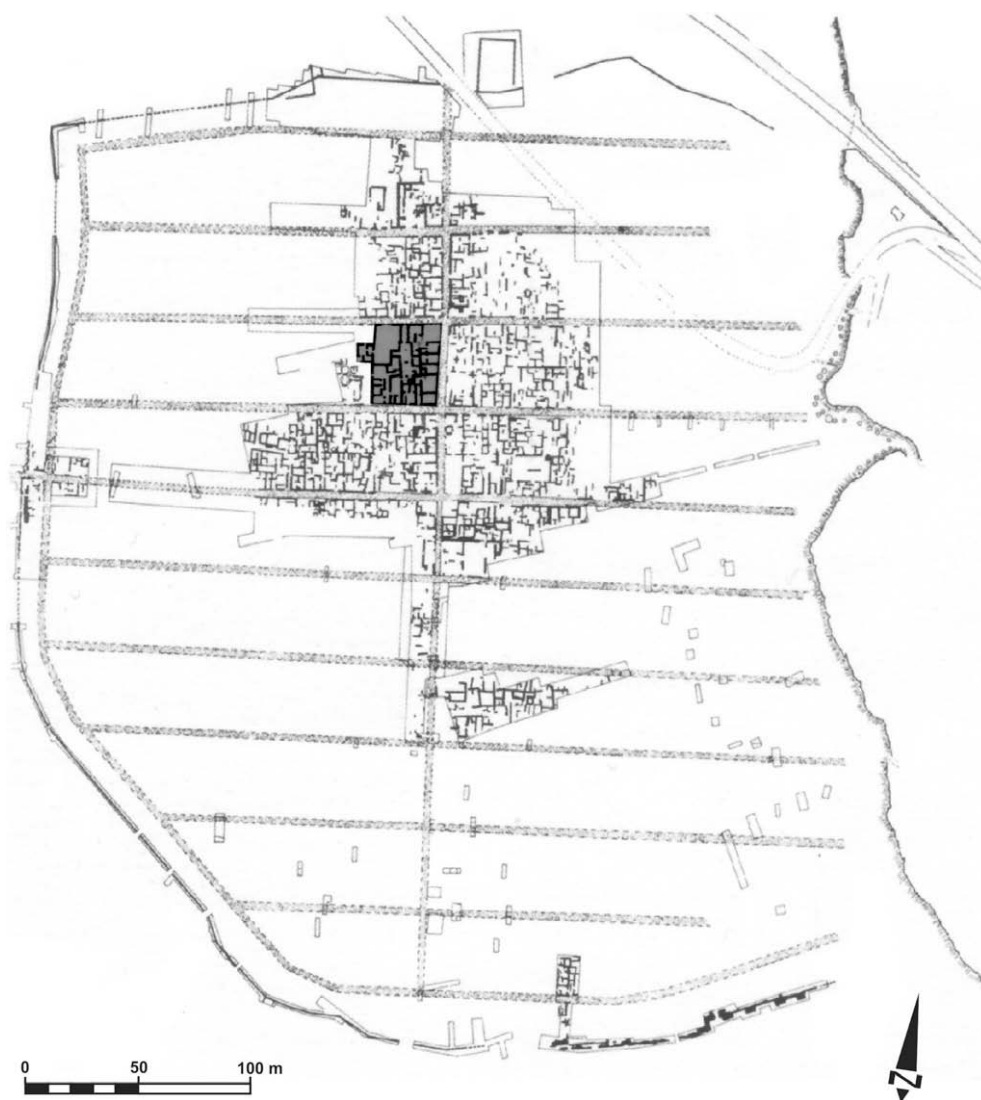


Fig. 4. Enkomi site plan (Level III) showing excavated area with Ashlar Building shaded (modified from Karageorghis, 2002, Fig. 208).

remarks on the difficulty of inferring behavior in archaeological contexts based solely on fixed-feature elements, suggesting that semifixed-feature elements are often needed to clarify the meaning of a space. These elements include small, portable artifacts, ecofactual material and large “portable” furnishings, such as troughs and larger ceramic vessels (e.g., storage vessels known as *pithoi*) that are not as easily moved. In many cases, published reports do not record the exact locations of these artifacts, or they were not found in secure, primary contexts, and one can do little more than to assign them to a particular stratum within a particular space. Where present, it is clear that semifixed-feature elements will have played a vital role in the nature of the interaction that might have occurred in a given space. In addition, these are precisely the sorts of items that the inhabitants of a building might use as territorial markers or to personalize space, providing possible insights into the personal or group identities of a space’s occupants.

Interaction potential: integrating access and nonverbal communication analyses

By combining the data gathered in access and nonverbal communication analyses, it is possible to measure *interaction potential*,

an indication of which spaces are more likely to host social interaction. I take Grahame’s (2000, ch. 7) discussion of interaction potential in the Roman houses of Pompeii’s Regio VI as a point of departure, adapting and modifying some aspects, while introducing new analytical techniques. Following Grahame, I begin by ranking the spaces within each building according to control value, RRA and depth values. The RRA values indicate how accessible each space is from the other spaces within the building, giving a sense of the overall pattern of interaction. In order to simplify matters, the RRA scores can be classified as high, medium or low by dividing the ranked set into thirds (while keeping equal RRA scores within the same category). Control values, on the other hand, reveal which spaces are likely to be local foci of interaction. They can also be ranked, with values of 1.0 or less being “low” (indicating that the space gives up more control than it retains), while values greater than 1.0 but less than or equal to 2.0 are “medium”, and those greater than 2.0 are “high”. The depth of a space from the exterior gives an indication of how accessible a space is to a visitor entering the building. Of course, accessibility must also take into account whether the space in question is on a direct route from the outside (determined with reference to the building’s axial map), or one with particularly wide doorways, or whether the route is marked with significant fixed- or semifixed-feature elements. These

ENKOMI ASHLAR BUILDING Level IIIA

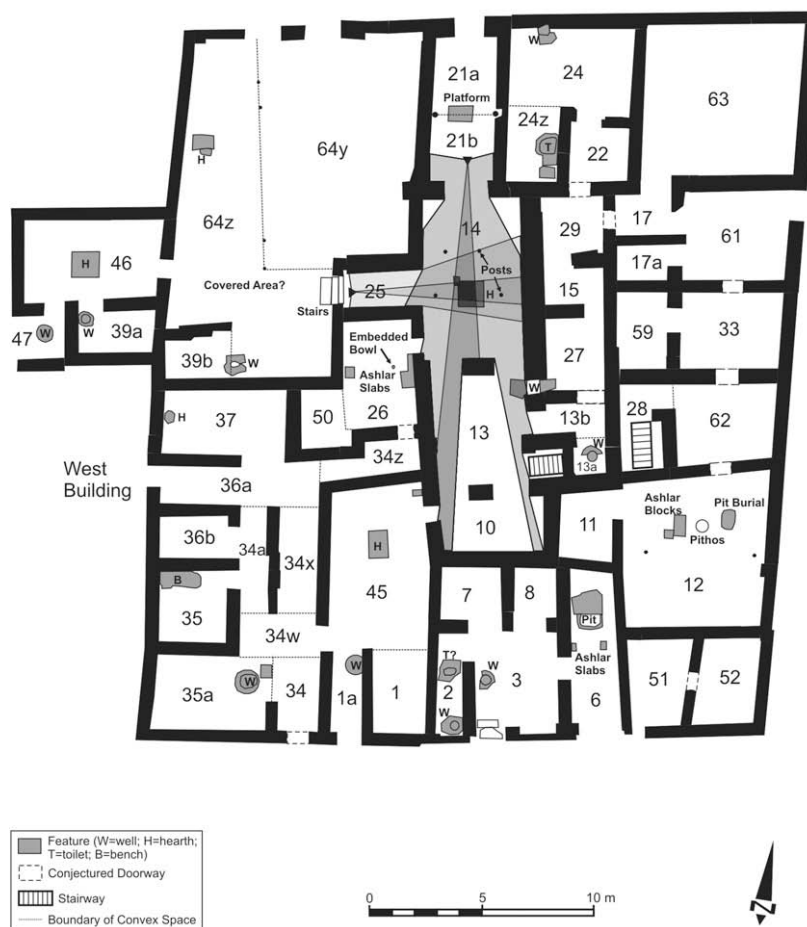


Fig. 5. Enkomi Ashlar Building Level IIIA schematic plan with viewsheds into Room 14 from Rooms 21b and 25. Note convergence of viewsheds on focal point of the hearth. Viewsheds cover 200° range of binocular vision; darker portion of viewshed indicates 10° range of detailed (foveal + macular) vision.

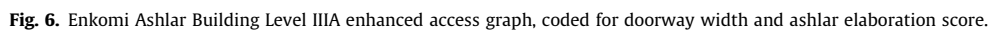
syntactic and architectural properties are useful not only for determining likely contexts of interaction, but also for providing some insight into what types of interaction—gatherings or occasions—might take place within each context.

Spaces suited to the informal and transitory nature of gatherings would need to be easily accessible in order to encourage chance encounters as people move through them. In syntactic terms, this suggests a space with a low RRA score and a medium to high control value. Since gatherings do not involve focused or sustained interactions, the size of the room is not a significant factor. Grahame (2000, p. 56) refers to such rooms as “movement spaces” since they tend to serve as conduits for people moving between various parts of a building. As such, these spaces tend to be narrow, rectangular hallways, with low convexity scores.

Far more important are the formal and sustained social interactions that take place during occasions. Occasions often involve the focused interaction of number of people within a defined spatial and temporal context and therefore have different syntactic and architectural requirements. They often require several interconnected spaces, typically arranged around a *node*, a space with a medium to high control value. The spaces that the node controls can serve as loci for activities ancillary to the occasion or as storage areas for the furnishings or equipment that occasions often require (see Grahame, 1997, p. 155). Such an arrangement would provide opportunities for two general types of occasions: public-inclusive and private-exclusive. I use the terms public and private here in

a relative sense, implying that “public” occasions would have a larger and perhaps more inclusive group of participants, including visitors from outside the building, rather than implying that the occasions would be open to the entire “public” of the society in question. These two types of occasions do not have to be temporally separate, and could be different facets of a single occasion. One should consider them as points along a continuum (tending toward publicity and inclusiveness at one end and privacy and exclusiveness at the other) rather than discrete categories of interaction. Nevertheless, it is necessary to define architectural and syntactic correlates of each type (Table 2).

A node would generally serve as the context for public-inclusive occasions and, in addition to having a medium to high control value, would also need to be accessible within the overall building layout and would therefore have a low RRA score. If the occasion were intended to include visitors, one would expect that it would occur in a fairly shallow space, or at least one on a direct or axial path from the outside. As it is necessary for such a context to accommodate a number of people, it must be fairly large and have a high convexity score (i.e., the room will tend toward a square). I would suggest that spaces with an area greater than 12 m² and a convexity score of 0.6 or greater would be suited to hosting public-inclusive occasions. Archaeological examples of such contexts would include the atrium of the typical Roman house (e.g., Wallace-Hadrill, 1994, pp. 83, 117) and the central hall of a medieval rural English home (e.g., Johnson, 1993), both of which were



In the foregoing discussion I have tried to demonstrate that, in order to investigate the relationship between the built environment and social interaction, it is necessary to integrate analyses of both syntactic and architectural properties of a building. Access analysis, used in combination with an assessment of the communicative aspects of a building's fixed and semifixed-feature elements, allows one to determine probable patterns of movement and encounter in a building and identify the types of social interaction that would likely occur in particular spaces. These methods do not tell the entire story, however, and a more nuanced picture of how a building serves as a context for interaction is possible by incorporating visibility into the analysis.

The important relationship between visibility, buildings and human interaction has long been recognized. In discussing the development of penal institutions, [Foucault \(1977\)](#) reveals how spatial partitioning is used as means of ensuring the visibility and surveillance of subject populations—epitomized by the design of Jeremy Bentham's *panopticon* in 1787. The partitioning of space can open up a building, rendering panoramic views of its interior, or permit narrow, penetrating views in which only glimpses of the interior are seen. The barriers that terminate views might be important architectural features or merely plain walls and the area covered by a field of vision might highlight significant groups of objects, gatherings of people or movement patterns ([Hanson, 1998](#), pp. 43–44). [Nielsen \(1995, p. 57\)](#) points out that architectural controls over visibility function much like the restriction of physical access by excluding people from other people, actions, objects, or informa-

tion. In order to assess the profound effects that building design has on what people can see as they move and interact in built space, we need to consider the physical properties of human vision.

Much of the information that humans gather as they move through the built environment is obtained through vision. Hall (1966, p. 61) notes that far more data is fed to the human nervous system through the eyes, and at a much greater rate, than through the other senses. The physiological structure of the eye is such that three types of vision operate simultaneously. The fovea is a small circular pit in the center of the retina and produces vision that is clear and sharp, allowing one to see fine details, although it only occupies the central 2° of the visual arc and is limited to a range of about 0.3 m (Hall, 1966, p. 66). The macula surrounds the fovea and contains a less dense concentration of color-sensitive cells, producing vision that is still detailed, but less so than foveal, occupying the central 10° of the visual arc horizontally and 3° vertically. Measured from a central fixation, the complete field of binocular vision extends approximately 200° horizontally and 135° vertically with a range of 15–90 m, depending on the subject and situation (Ciolek, 1980; Wandell, 1995). This represents the peripheral field of vision, which uses the area of the eye farther from the center of the retina. It is coarser and characterized by a diminished capacity to distinguish colors but a heightened ability to detect motion (Hall, 1966, p. 67).

There are a number of ways in which elements of visual perception can be taken into account in the integrative approach. The most basic method is the *visibility score*, a measure of the number of spaces that can be seen into from a particular space. In order to count toward the visibility score, I suggest that a viewer should be able to see at least 30% of the room's interior. In terms of surveillance, this rule helps to exclude spaces, only a small portion of which might be visible from the room in question and could potentially be contexts of movements, activities or interactions that are largely unseen. While the visibility score provides a quantifiable means by which to compare rooms both within and between buildings, it cannot convey the qualitative aspects of visual perception. Recall that axial lines, which represent the fewest and longest lines of access through a system of spaces, are also lines of visibility. These lines, however, are only one-dimensional in nature and do not take into account the entire visual arc of a space's occupant.

The use of *isovists* helps to overcome these deficiencies by capturing something of the visual experience as one moves through a room. Isovists are defined as the set of all points visible from a particular vantage point in space (Benedikt, 1979, p. 47). Given the limitations of two-dimensional representation, an isovist will appear on an architectural plan as a polygon (Fig. 3a). It is possible to broaden the extent of an isovist to include all the points visible from a particular space, defining what Benedikt (1979, p. 54) refers

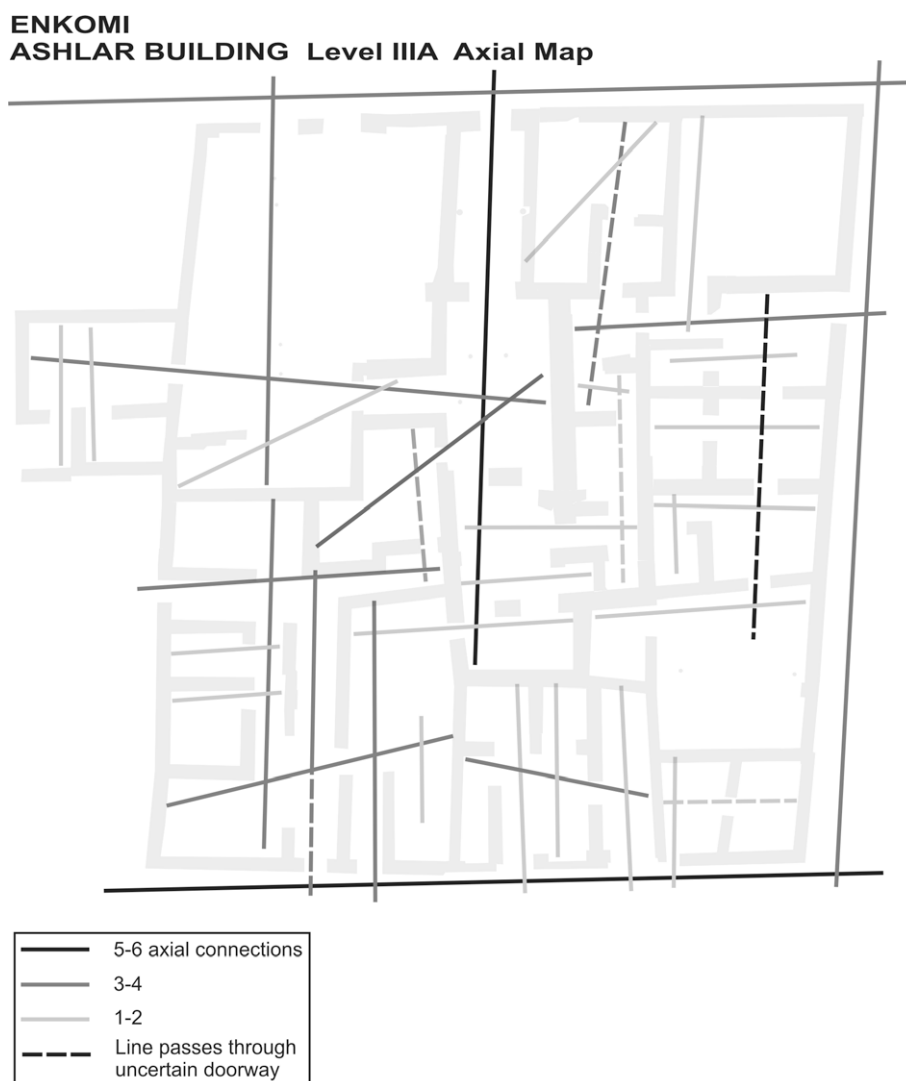


Fig. 7. Enkomi Ashlar Building Level IIIA axial map coded for connectivity.

to as an *isovist field* (Fig. 3b). Given the directional limitations of human vision noted above, it is also desirable to simulate the view of an individual from a particular vantage point facing or moving in a particular direction. Although the term *viewshed* is typically applied to visibility in the landscape, I use it here to describe this more limited, directional field of view, which is essentially a subset of the *isovist*. Shown two-dimensionally, a viewshed appears as a polygon extending 100° on either side of a central axis that projects forward from the center of the viewer and taking in the entire 200° horizontal sweep of human binocular vision. In addition, one can depict the 10° arc of more detailed vision (foveal and macular), which extends 5° to either side of the central axis (Fig. 3c).

While it is possible to construct *isovists*, *isovist fields* and *viewsheds* from any space in a building, I use them in the case study below to examine visibility from spaces that the syntactic and architectural analyses indicate were important for structuring social interaction within the building. It is also possible to increase the analytical power of these visibility polygons by coding them with a series of concentric circles representing Hall's proxemic thresholds. For instance, this would allow one to center an *isovist field* on a particular feature that was likely an important focus of interaction (e.g., a hearth) and assess the relationship of the feature location to the types of interaction that might take place at various proxemic distances from it (e.g., see Fig. 8). Hanson (1998, p. 106) notes that visibility is often a means by which the basic accessibility syntax of a building is "fine-tuned" in order to interface or distance different types of relationships more effectively. Aside from

variability in the effectiveness of eyesight among individuals, visibility would, of course, be affected by the type (natural or artificial) and location (windows, fixed or portable artificial sources) of interior lighting as well as the use of doors and screens. Unfortunately, archaeological evidence of these is uncommon and, even where available (e.g., lamps or wall brackets), is rarely found *in situ*.

The inclusion of visual perception in analyses of building interiors has become increasingly prevalent in studies of contemporary architecture and human behavior (Bafna, 2003; Hanson, 1998). In spite of growing recognition of the importance of visibility in the investigation of archaeological phenomena, study to date has been limited mostly to the use of viewsheds within the context of landscape visibility to, and from, monuments (see Lake and Woodman, 2003). Some archaeologists have examined the relationship of visibility to building exteriors, such as Moore's (1996) groundbreaking study of Andean monumental architecture in which he analyzes the visual impact of monuments as approached by viewers. A study of Minoan palaces by Letesson and Vansteenhuyse (2006) marks a more recent application of Moore's methods. Attempts to investigate visibility in the interiors of ancient buildings, however, have been few and far between. Sanders's (1984, 1990) innovative analysis of the link between architecture and behavior at the Early Bronze Age village of Myrtos on Crete marks one of the first attempts to apply the equivalent of viewsheds (he calls them "sightlines") to building interiors, providing insight into notions of privacy and territoriality held by the inhabitants of the site. Nielsen (1995) takes visibility into account in his study of Late and



Fig. 8. Enkomi Ashlar Building Level IIIA schematic plan with isovist field for Room 14 showing proxemic distances from central hearth.

Inka period ritual structures at Los Amarillos, Argentina, demonstrating that architecture was used by elites to allow people of lower status to view ritual performances while excluding them from direct participation.

These studies highlight the potential for visibility analyses to illuminate further the complex relationship between the built environment and social interaction. While the methods outlined above only capture two dimensions of what is really a three-dimensional means of perception, they are an essential component of the integrative approach, allowing one to account for the role of human vision in the social analysis of ancient buildings. I will demonstrate the value of such an approach with a brief case study based on my ongoing investigation of the relationship between architecture and social transformation in Late Bronze Age Cyprus.

Case study: the Level IIIA Ashlar Building at Enkomi

The Late Bronze Age (or Late Cypriot [LC] period; c. 1650–1100 BC) was an important period on Cyprus, marking its transformation from a relatively insular, village-based society with incipient social differentiation, to a cosmopolitan, socially stratified, urban-oriented civilization (Knapp, 2008, pp. 131–280; Knapp et al. 1994, pp. 224–229; Steel, 2004a, pp. 149–86). Of particular interest are the profound changes to the island's built environment that occurred at this time, including the appearance of monumental architecture and the rapid development of planned urban centers. In spite of excavations at a number of Late Cypriot sites, there has been little research into the social aspects of their architectural remains. Most studies of Late Cypriot architecture, informed by art-historical and culture-historical paradigms, have been descriptive rather than explanatory, focusing on issues such as stylistic classification and change, chronology or technical aspects of construction. More recent work, influenced by processual archaeology, has tended to see LC architectural change as reflecting the emergence and development of sociopolitical complexity, emphasizing the function of settlements and buildings within politico-economic systems (Keswani, 1993; Knapp, 1997, pp. 46–63). Currently, some scholars have undertaken more agent-centered research that recognizes the recursive interrelationship between architecture and social reproduction and the important role that buildings played in the creation of LC social identities (e.g., Knapp, 2003, 2008; Manning, 1998; Bolger, 2003). In a similar vein, my own work focuses on how the new built environments transformed sociopolitical organization and power relationships on the island by changing how people interacted with one another (Fisher, 2006, 2007a, 2007b). The Ashlar Building at Enkomi provides an apposite case study and, in particular, I will examine the arrangement and social significance of the building's multiple hearth rooms.

The site of Enkomi (Fig. 4) is located in eastern Cyprus at the centermost point of a large, sheltered bay, some 3 km inland from the present coastline. It has a long history of archaeological investigation (see Courtois et al., 1986, pp. 1–2), but excavations by the French under Claude Schaeffer from 1934 to 1973 (with interruptions) and the Cypriot Department of Antiquities under Porphyrios Dikaïos from 1948 to 1958 uncovered nearly all of its extant architecture. Their work has revealed a sequence of settlement dating at least as far back as the end of the Middle Bronze Age (c. mid-17th century BC) and continuing through a number of reconstructions before the site was largely abandoned around 1100 BC. Following a massive destruction c. 1200 BC, the site was re-built on a grand scale, with new fortifications, an orthogonal street plan and a number of monumental buildings that used ashlar masonry, including the Ashlar Building.

Named for the extensive use of cut-stone masonry, the Ashlar Building was located in the center of the re-built city and was

clearly one of Enkomi's largest and most impressive structures. It was erected over the leveled remains of an earlier complex whose walls served as foundations for some of the new construction. While the Ashlar Building's north, east and south limits are defined by city streets, a few published site plans (e.g., Courtois et al., 1986, Fig. 1) indicate that there were structures that adjoined it on the west (likely filling out the rest of the urban block). Unfortunately, they were only partially excavated and have not been published. I therefore use the generic label of "West Building" for the space that adjoins Room 36a on the west. Dikaïos's (1969–1971) excellent publication of the building's architectural remains allows a detailed understanding of its construction and layout. Fig. 5 represents a probable reconstruction of the Ashlar Building (Level IIIA), including the locations of conjectured doorways, based on a comprehensive analysis of the published excavation data and first-hand observation of the site. I have discussed this analysis in detail elsewhere, providing an alternative access map and additional syntactic calculations (Fisher, 2007a, ch. 6).

Much of the building is constructed of ashlar masonry, several types of which were employed. The extant architecture indicates that courses of ashlar masonry rose to a height of up to 1.5 m or more and were surmounted by a plastered mudbrick superstructure. There was undoubtedly a second story covering parts of the main floor, although only probable stairway locations are extant. Some areas, particularly in the southwest part of the building, were constructed entirely of plastered rubble and mudbrick walls. While designed using a coherent plan, architectural evidence such as abutting of various walls against those of the central hall (see Dikaïos, 1969–1971, pp. 179–180, 514–516) suggests that the central hall (Rooms 14, 13 and 10) and vestibule (Rooms 21a and 21b) were constructed first, along with the row of rooms immediately to the east (Rooms 29, 15, 27 and 13a–b). Shortly thereafter, the structure underwent some alterations, including a remodeling (really a "monumentalization") of the vestibule, a widening of the doorway between the vestibule and Room 14, and the construction of a monumental hearth in Room 14. At the same time other rooms were added in the east, south and southwest, completing the overall structure.

The Ashlar Building is perhaps best described as a large elite residence (Dikaïos, 1969–1971, p. 171), primarily planned around spaces whose primary function was to facilitate inhabitant–visitor interaction. We can begin to see how the building structured social interaction with reference to its access and axial graphs (Figs. 6 and 7) and the ranking of key syntactic and architectural properties (Table 3). On the whole, the building is fairly permeable from the outside, with nine spaces having direct access to the surrounding streets, suggesting that the building is well integrated with Enkomi's urban fabric. I will argue, however, that this arrangement of multiple entries was designed largely to "filter" visitors according to their social status and concomitant participation in particular social occasions in certain spaces within the building. The access graph also clearly indicates the existence of distinct sectors, reflecting both the building's construction history and some degree of internal functional differentiation. The axial map indicates the various major routes through the building that clearly parallel the structure's north–south and east–west axes. When coded for axial connectivity (the number of other axial lines with which each axial line connects) it clearly shows the importance of the north–south routes, which tend to be longer and penetrate more deeply into the building.

The central hall, and Room 14 in particular, plays a vital role in structuring movement and interaction in the Ashlar Building. The syntactic properties of the hall and its adjoining rooms combine with the placement of important fixed and semifixed-feature elements to create interrelated contexts for interaction among the building's inhabitants and visitors. Rooms 14 and 13 have low RRA values, indicating that they are well integrated into the overall

Table 3
Enkomi Ashlar Building Level IIIA ranking of key syntactic and architectural properties. Darker shaded cells indicate private-exclusive spaces; lighter shaded cells indicate public-inclusive spaces.

Control value rank			Real relative asymmetry rank			Depth rank			Convexity rank			Visibility rank		Ashlar elaboration rank	
Room	CV		Room	RRA		Room	Depth	On axial route?	Room	Area (m ²)	Relative convexity	Room	Score	Room	AE score
37	0.2000	Low	Carrier	0.6136	Low	3	1	y	36a	12.96	0.25	1	1	34	0.00
39b	0.2000	Low	61	0.7168	Low	6	1	y	34a	6.19	0.25	11	1	35	0.00
WBldg	0.2000	Low	64z	0.7494	Low	34	1	y	2	5.69	0.27	28	1	47	0.00
1	0.2500	Low	34	0.7603	Low	51	1	y	6	14.70	0.30	35	1	1a	0.00
35	0.2500	Low	1a	0.7711	Low	61	1	y	34x	8.17	0.33	47	1	35a	0.00
17a	0.2500	Low	21a	0.7983	Low	1a	1	y	1a	5.04	0.39	52	1	36a	0.00
36b	0.2500	Low	45	0.8200	Low	21a	1	y	13b	3.88	0.40	59	1	36b	0.00
6	0.3111	Low	34w	0.8309	Low	64y	1	y	Stair 1	3.88	0.40	63	1	39a	0.02
64y	0.3111	Low	64y	0.8309	Low	64z	1	y	25	5.60	0.46	24z	1	62	0.02
47	0.3333	Low	3	0.8689	Low	2	2		37	15.82	0.51	2nd Floor	1	34w	0.04
50	0.3333	Low	14	0.8689	Low	7	2		39a	6.29	0.54	36b	1	50	0.05
59	0.3333	Low	25	0.8798	Low	8	2	y	10	11.03	0.54	39a	1	33	0.07
13a	0.3333	Low	6	0.8852	Low	17	2	y	46	21.35	0.57	Stair 1	1	46	0.07
39a	0.3333	Low	13	0.8961	Low	25	2		1	8.55	0.59	2	2	34x	0.08
1a	0.3611	Low	51	0.8961	Low	33	2		39b	5.40	0.60	7	2	37	0.09
2	0.4000	Low	17	0.9069	Low	45	2	y	36b	5.64	0.61	8	2	34a	0.10
7	0.4000	Low	21b	0.9178	Low	46	2		45	32.26	0.61	50	2	61	0.11
8	0.4000	Low	33	0.9286	Low	52	2		15	4.16	0.62	51	2	34z	0.13
34x	0.4000	Low	35a	0.9449	Low	17a	2		14	32.40	0.63	17a	2	1	0.15
25	0.4500	Low	10	0.9558	Medium	21b	2	y	34z	5.49	0.63	WBldg	2	63	0.16
10	0.5000	Low	17a	1.0101	Medium	34w	2	y	64z	73.48	0.63	6	3	22	0.17
11	0.5000	Low	46	1.0210	Medium	35a	2		24	20.16	0.64	17	3	52	0.18
52	0.5000	Low	34a	1.0318	Medium	39b	2		35a	17.09	0.66	22	3	17a	0.18
24z	0.5000	Low	34x	1.0536	Medium	1	3		34w	7.65	0.66	24	3	64z	0.18
34z	0.5333	Low	39b	1.0536	Medium	10	3	y	51	10.34	0.68	26	3	51	0.19
35a	0.5333	Low	26	1.0698	Medium	14	3	y	26	15.04	0.68	27	3	17	0.20
21a	0.6111	Low	29	1.0753	Medium	29	3	y	52	10.40	0.70	13a	3	39b	0.20
21b	0.7500	Low	13b	1.0807	Medium	47	3		17	4.59	0.71	1a	3	59	0.21
Stair 1	0.7500	Low	62	1.1079	Medium	59	3		17a	3.60	0.71	39b	3	45	0.22
34	0.8111	Low	1	1.1187	Medium	62	3		34	6.20	0.71	12	4	12	0.30
27	0.8333	Low	Stair 1	1.1187	Medium	63	3		64y	66.85	0.73	25	4	6	0.33
28	0.8333	Low	2	1.1622	Medium	34a	3		33	15.08	0.74	33	4	28	0.34
29	0.8333	Low	7	1.1622	Medium	34x	3	y	62	15.35	0.78	62	4	24	0.38
63	0.8333	Low	8	1.1622	Medium	39a	3		11	7.05	0.78	13b	4	24z	0.42
15	1.0000	Low	52	1.1893	Medium	12	4		7	4.35	0.79	64y	4	11	0.47
22	1.0000	Low	36a	1.1893	Medium	13	4	y	24z	7.20	0.80	3	5	26	0.53
2nd Floor	1.0000	Low	63	1.2002	Medium	15	4		27	8.32	0.81	15	5	8	0.55
51	1.1111	Medium	15	1.2110	High	22	4		13	20.30	0.83	29	5	7	0.56
17	1.2500	Medium	27	1.2110	High	26	4		61	18.33	0.83	37	5	2	0.56
12	1.3333	Medium	59	1.2219	High	28	4		3	14.94	0.87	21a	5	29	0.57
62	1.3333	Medium	34z	1.2219	High	35	4		8	6.60	0.87	64z	5	3	0.59
24	1.5000	Medium	28	1.2436	High	36a	4	y	29	6.60	0.87	10	6	64y	0.62
13	1.5833	Medium	2nd Floor	1.2490	High	36b	4		22	5.98	0.88	45	6	10	0.64
14	1.5833	Medium	47	1.3142	High	11	5		47	4.29	0.89	46	6	13a	0.65
33	1.5833	Medium	39a	1.3142	High	24	5		13a	1.75	0.89	21b	6	27	0.66
26	1.7500	Medium	35	1.3251	High	27	5		50	6.11	0.90	34z	6	21a	0.70
13b	1.7500	Medium	36b	1.3251	High	37	5		28	3.99	0.90	14	7	15	0.70
61	1.7778	Medium	22	1.3468	High	50	5		63	45.50	0.93	34	7	13b	0.71
34w	1.8333	Medium	50	1.3577	High	13b	5		12	42.21	0.94	61	7	25	0.75
45	2.2000	High	13a	1.3848	High	2nd Floor	5		21b	7.84	0.96	34a	7	21b	0.80
46	2.2000	High	12	1.3902	High	34z	5		21a	8.12	0.97	34x	7	13	0.82
34a	2.4000	High	37	1.4772	High	Stair 1	5		35	9.30	0.97	35a	7	14	0.87
64z	2.4444	High	WBldg	1.4772	High	WBldg	5		59	5.18	0.98	13	8	2nd Floor	na
Carrier	3.1833	High	24	1.6292	High	13a	6		2nd Floor	0.00	na	36a	9	Carrier	na
36a	3.2500	High	11	1.6835	High	24z	6		Carrier	na	na	34w	10	Stair 1	na
3	3.3111	High	24z	1.9225	High	Carrier	na		WBldg	na	na	Carrier	21	WBldg	na

pattern of accessibility. They are also “controlling” spaces, both having medium control values. Combined with the rooms’ large sizes and high convexities, I would suggest that they were most likely used for public-inclusive social occasions that centered on the formal reception of visitors. Both the axial map and the access graph (the latter of which I coded for doorway width and ashlar elaboration score) indicate the importance of the axial route from the north façade through the vestibule and on into the central hall. The street entrance to the vestibule (Rooms 21a and 21b) was likely one of the most elaborate, built with ashlar door jambs, what might have been an ashlar threshold (now robbed) and a pit that likely held a door pivot (Dikaïos, 1969–1971, p. 173). It was undoubtedly the official or ceremonial entrance to the building. The vestibule itself is also architecturally complex and was constructed of an elaborate form of ashlar masonry with evidence for wooden pilasters placed antithetically at the room’s midpoint on either side of a plastered rectangular platform that rose 0.13 m above the floor level. This resembles a formal hearth, but there is no evidence of burning. The south end of the vestibule was also given an elaborate doorway with an ashlar threshold. I would suggest that these arrangements were intended to give the vestibule a liminal character, marking the transition from the “outside” to the “inside” of the building. These various features were not just visual cues of this transition, but were also physical in nature by forcing one to adjust his or her movements in response to their presence.

Passing through the vestibule, visitors would enter Room 14, which has the highest ashlar elaboration score in the building. This room could accommodate as many as 58 people seated or 103 standing. A massive ashlar column separates Rooms 13 and 14, functioning as a partition wall. Room 13 provides access to Stair 1, which would have led to an upper story (not preserved), and a hallway, Room 13b, which led to wing of small rooms (27, 15 and 29) that had syntactic and architectural characteristics well-suited to hosting private-exclusive occasions, including low control values and high convexity and RRA scores (except Room 29, which has a medium RRA score). There are two doorways on the west side of Room 14, one of which connects with Room 26, while the other provides access to Room 25, a short hallway that connects with a large court (Rooms 64y and 64z). Room 25 is constructed at a higher elevation than the court and the doorway between them is quite elaborate with ashlar steps and an ashlar threshold that was pierced for a door pivot. The court, which is the largest space in the building, is also directly accessible from the north street through a double doorway, each opening of which is 1.6 m wide (the mean doorway width for the building is 1.32 m). I address the significance of this arrangement below.

Room 14 is particularly important in that it contained an elaborate square hearth, 1.2 m wide, which may have been surrounded by up to four wooden posts.² Viewsheds from the perspective of someone entering Room 14 from either the vestibule or Room 25 are drawn to the physical and visual focal point of the hearth, which

is backgrounded in either view by impressive ashlar masonry (Fig. 5). Enhancing the effect of this view was undoubtedly the impetus behind the aforementioned renovations that accompanied installation of the hearth and moved the east wall of the vestibule outward, while widening the doorway to Room 14 from 1.5 to 2 m. It is important to emphasize the significance of the hearth as a focal point of the social occasions that occurred in Room 14. I have argued that the hearth symbolized control over the transformative qualities of fire, which turned raw food into cooked, clay into ceramics, and ore into metal artifacts (Fisher, 2007b, pp. 96–97). This particular hearth was the largest and most elaborately constructed in the building. It was not simply installed on the existing plaster floor, but rather the original floor and underlying soil were removed, nearly down to the bedrock (Dikaïos, 1969–1971, p. 176). The resulting pit was refilled with soil mixed with potsherds and some pieces of the former floor, capped by a layer of red mortar. The hearth itself was constructed of a layer of potsherds overlaid by a layer of plaster that was heavily burnt. A rectangular stone slab was also embedded in the northwest corner. I would explain this operation as some form of foundation rite necessary for the construction of such a symbolically important feature, reflecting the ideologically-charged nature of the hearth and the room that contained it.

There are two other rooms in the Ashlar Building with large formal hearths. Room 45 is quite similar to Room 14 in terms of size and shape and its syntactic properties would likewise support public-inclusive social occasions. The room, however, is constructed mostly with rubble masonry, except where it abuts previously built ashlar walls, and its hearth was smaller and not constructed as elaborately as the one in Room 14. Visitors would have entered Room 45 through a short hallway or vestibule (Room 1a) from the south street. It adjoins the central hall through a doorway in its northeast corner, although I would suggest that Room 10 serves as a liminal space between Room 45 and the main rooms of the central hall (Rooms 13 and 14), a point I will return to below. Room 46 is smaller than the other hearth rooms and, like Room 45, is built mainly of rubble masonry. It is large enough and has the high control value of a space that might host public-inclusive occasions, but is slightly less convex (0.57) than the 0.6 cut-off and has a medium RRA score, suggesting that it is somewhat less accessible than the other hearth rooms. It is notable for its narrow doorway (only 0.85 m); the state plan (see Dikaïos, 1969–1971, plate 273) indicates that the walls that form the doorway were built of rubble and abut earlier ashlar walls to the north and south. This suggests that they were likely a later addition aimed at limiting physical and visual access to Room 46.

What sort of social occasions might have taken place in these hearth rooms? Converging lines of evidence suggest that the preparation and consumption of food was a significant component of these occasions. In particular, I contend that these rooms served as the foci for ceremonial or competitive feasts during which the elite occupants could, depending on the occasion, either build social ties with visitors or create and reinforce social distance and distinction. Such feasts are characterized by “the communal consumption of food (including drink)—usually foods that are different from everyday practice—and the component of social display—usually of success, social status or power” (van der Veen, 2003, pp. 414–415). Late Helladic (or “Mycenaean”) vessels imported from the Aegean Sea region, as well as their locally-produced imitations (often referred to as White Painted Wheelmade III), played an important role in social display among Late Cypriot elites, particularly during competitive feasting (South and Russell, 1993; Steel, 1998, 2004b). Mycenaean *kraters* (large open vessels for serving wine) were especially important in both elite feasting and funerary contexts, and may have been carefully curated and used only during specific occasions such as ceremonial feasts (Keswani, 1989, p. 562; Steel, 1999, p. 808, 2004b, p. 173).

² Dikaïos, 1969–1971, pp. 175, 515) interprets a sandstone block embedded in the floor to the north of the hearth as the base of a wooden post. Furthermore, he argues that a small ash-filled pit surrounded by stones 1 m to the west of the block and another pit to the west of the hearth were holes for additional wooden posts. Dikaïos hypothesizes a fourth post to the east of the hearth (the evidence for which was “destroyed by a tomb searcher’s pit”) based on analogies with hearth room arrangements found in contemporary Mycenaean megaron buildings from palatial sites in the Greek mainland (e.g., Pylos, Mycenae, Tiryns). Presumably, the posts might have supported a clerestory or second-story interior balcony surrounding an opening above the hearth. This interpretation stems from Dikaïos’s desire to see the builders of the Ashlar Building as Mycenaean immigrants and the central hall (Rooms 10, 12 and 14) as a megaron (see Dikaïos, 1969–1971, pp. 176, 180, 513–515, 519–5121). I have argued against any such Mycenaean affiliations (Fisher, 2007b) while the existence of the posts, particularly the ones to the east and west of the hearth, remains speculative at best.

A number of ceramic vessels and querns found in various contexts adjoining the Ashlar Building's central hall are indicative of the preparation and consumption of food and drink (see Dikaio, 1969–1971, pp. 314–315, plate 94). Within the central hall itself, fragments of several vessels indicative of these activities were recovered, including three Late Helladic (LH) bowls and one local imitation, a three-handled jar, and two *hydriae* (water jugs). More specifically, fragments from a number of Mycenaean vessels were found in Room 14 in association with the hearth, including several bowls, a dish, a jug with a side-strainer spout, a bell-shaped *krater* decorated with spirals, two *hydriae* and a three-handled jar. This ceramic assemblage is highly suggestive of elite feasting and underscores the importance of the hearth as a focus of these occasions, although the scale of this activity is unclear from the artifacts alone. Do they represent the normal domestic activities of the Ashlar Building's elite occupants, or are they indicative of social occasions in which visitors, perhaps in larger groups, also participated? The syntactic characteristics and fixed-feature and semifixed-feature elements of the large hearth rooms and their adjoining spaces might shed some light on this issue.

I would argue that the rooms with large formal hearths served as the foci for feasting occasions that involved the interaction of building occupants and visitors. These spaces are quite large: Rooms 14 and 45 are nearly identical in size at 32.4 and 32.3 m² respectively, while Room 46 occupies 21.4 m²—certainly beyond the spatial requirements of the building residents themselves. They could therefore accommodate a large number of people, while the adjoining rooms could be used for larger, public-inclusive occasions (e.g., Room 64y/64z), or smaller, private-exclusive occasions (e.g., Rooms 27, 15 and 29) as the circumstances required. Room 14 is the most architecturally elaborate room in the building, and was likely the context for the most important occasions involving the highest ranking occupants and visitors. Rooms 45 and 46, which are far less elaborately constructed, likely played host to less important events.

The central location of the formal hearths in these rooms was likely due, at least in part, to practical considerations such as heating a large room and concerns over the potential spread of fire. Nevertheless, the central placement of the focal point of a space sets up a different interaction dynamic than would be present if the hearth were placed at one end of the hall or along one of the long side walls. If, as Dikaio suggests, there was an arrangement of posts around the hearth in Room 14, it would set up a smaller context for interaction between the hearth and the posts, centering on the hearth and extending from 0.9 to 1.2 m outward from its edges. This distance corresponds quite closely to Hall's (1966, pp. 119–120) "personal distance" within which social interaction occurs among participants who are within (close phase) or just outside (far phase) of touching distance (Fig. 8). Hall observes that these interactions can involve discussion of subjects of personal interest and involvement. At this distance, participants are close enough to perceive facial details and expressions, as well as what Goffman (1963, p. 25) refers to as one's *personal front*: details in clothing, hair, jewelry and other nonfixed-feature elements that nonverbally communicate gender, rank, office and other aspects of individual and group identity. Olfaction is also important at this distance and likely played a significant role in the context of preparing and consuming food and drink. In addition, the arrangement had an esthetic and atmospheric effect, with light from the fire lighting up the posts and casting shadows on the wall, further enhancing the perception of this part of the room as a visual focal point.

The isovist field for Room 14, coded for proxemic distances from the central point of the hearth, also indicates that the distance between this hearth and the possible "symbolic hearth" in the vestibule corresponds quite closely with the limits of the near phase of

public distance. This symbolic hearth, and the columns that flanked it, physically mark what was clearly a significant social boundary at the midpoint of this liminal space. It is at this point in approaching the hearth in Room 14 that one moves into the proxemic range in which more subtle details begin to become visible (as Hall (1966, p. 127) notes, a smile is discernable from a scowl at this distance), yet one is still far enough away to be able to take in the hearth and its entire setting with peripheral vision.

Each of the hearth rooms is laid out in a similar manner, with the hearth centered on the room's longitudinal axis but placed farther from the room's main entrance (i.e., closer to the "back" of the room). It is therefore likely that, during occasions that involved many participants, the majority of people would have been in the space between the main entrance and the hearth. As a result, participants beyond the personal distance around the hearth would be at the close and far phases of "social distance" (1.20–3.65 m) where interaction with those around the hearth would take on a more impersonal or formalized character. It is possible that proximity to the hearth (and presumably any presiding elite occupants) during these occasions was an indicator of relative status. In the case of Room 14, the wide ashlar column provided not only an impressive visual backdrop to the proceedings, but may have served to enhance the acoustic properties of the room, providing greater clarity to sounds directed toward its main entrance.

Ultimately, the Ashlar Building at Enkomi and other Late Cypriot monumental buildings were aimed at producing meaningful contexts for social interactions during which various facets of individual and group status and identity could be displayed, negotiated or reinforced. Whatever their practical functions, these structures reified the establishment of social boundaries through which wider social structures were reproduced or transformed. Pellow (1996, p. 2) suggests that, because boundaries are socially constructed, they invite ambiguity. Structures like the Ashlar Building provide a vital physical dimension to boundaries that mutually reinforces the social one. Often a redundancy of visual cues is used to reduce ambiguity and increase the likelihood that the messages encoded in the architecture are transmitted, understood, and would result in the behavior desired by the building's occupants (see Rapoport, 1988, p. 321).

This process began at the building's street entrances with the use of multiple doorways, designed to "filter" or, to use Markus's (1987) term, "classify" visitors, the more important of whom used the central entrance on the north façade to enter the small but very elaborate vestibule (Rooms 21a/b). By contrast, the large, double entrance to the west led into the large open court (Rooms 64y/64z) that could accommodate far more people who were likely of lower status. These individuals could not proceed directly into Room 14, but those who were permitted to do so were funnelled into a purpose-built hall (Room 25) that was constructed at a higher elevation and directed views and movement to the hearth and impressive ashlar walls of Room 14. Ashlar thresholds, embedded slabs and door jambs were important nonverbal cues as to the intended use and importance of an entrance, as was a change in elevation. Rapoport (1990, p. 107) observes that height is a nonverbal cue relating to social status in many cultures and, typically, "the higher off the ground, either in person or in building form, the higher the status". The use of vestibules or hallways as entries to important spaces essentially extended the liminal role of the threshold over a longer distance and so increased the consciousness of the transition for those who moved through them. These hallways also highlighted important viewsheds, directing one's vision (and movement) toward important architectural features. Other fixed and semifixed-feature elements, such as the "symbolic" hearth in Room 21a/b or the wine cup embedded between ashlar slabs in Room 26, further enhanced this effect and encoded additional behavioral

cues. Multiple entrances along the south façade of the building, including two that were side by side (Rooms 34 and 1a) undoubtedly were part of the same strategy of classification.

Inside, this filtering continued with the provision of multiple venues suited for feasting or similar types of public-inclusive occasions. While similar in plan, Room 14 differs significantly from the other hearth rooms in architectural elaboration, befitting its role as the physical and ideological center of the building. In addition, the central hall was deliberately isolated from direct physical and visual access through the use of liminal or transitional spaces (Rooms 21a/b, 25, 10, 13b and the north section of Room 26) that may have marked one's passage from common or utilitarian space to a context of great ideological and symbolic importance. The hearth rooms were undoubtedly the foci of public-inclusive occasions, but their adjoining spaces provided ancillary contexts suited for more private-exclusive occasions that may have been part of the main occasion, or used to accommodate additional participants, the storage of equipment, or preparation of food. Some occasions, particularly those in Room 14, were most likely intended for elites of equal or lesser status with whom the Ashlar Building's primary occupants would be competing for power. The funerary evidence from Enkomi clearly indicates that a hierarchical social order dominated by hereditary elites emerged during the Late Cypriot period, but also suggests that there was no single group of tombs that were of sufficiently greater wealth to warrant designation as paramount or "royal" tombs (Keswani, 1989, 2004). Although less than 20% of the site has been excavated, the extant architecture supports this contention as there does not appear to have been a single focus of administrative power (Fisher, 2007a, p. 291; Keswani, 1996; Manning, 1998, p. 53). Given the competitive sociopolitical environment, many of these occasions were likely what Dietler (2001, p. 85) refers to as "diacritical feasts", during which distinctive foods, elaborate dining sets and exotic social practices served to naturalize and reify concepts of ranked differences in status. Other feasting occasions likely involved the participation of non-elites, changing the dynamic from diacritical feasting to a "patron-role" mode of commensal politics in which a relationship of reciprocal obligation was engendered through hospitality (Dietler, 2001, pp. 82–85). During such occasions, the host provided for guests of lower status who reciprocated, not in kind, but by assuming social indebtedness. Thus, while mechanisms that both created and downplayed social distance between hosts and guests were at work during the same feasting occasions (Dietler, 2001, p. 88), it is also likely that feasts emphasizing one aspect or the other were held at different times, within different contexts and likely with different groups of participants. One should also bear in mind that many of these rooms were not likely being used for official social occasions at all times, but were likely given over to more routine social occasions and domestic activities on daily, monthly or seasonal cycles (e.g., Berry, 1997).

My analysis of a number of Late Cypriot monumental buildings reveals that a great deal of space within each building was dedicated to contexts suited for public-inclusive interactions (Fisher, 2007a). The syntactic and architectural properties of these contexts suggest that one of the primary functions of their host buildings was to facilitate interaction between inhabitants and visitors. In the Ashlar Building, this interaction often took the form of competitive feasting. Monumental structures such as the Ashlar Building and the new urban environments of which they were part were elements of a new strategy of elite place making in which buildings came to replace the funerary realm as the primary arena in which Late Cypriot sociopolitical dynamics were played out. The changing built environment fundamentally altered patterns of social interaction and, in so doing, played a pivotal role in transforming Late Cypriot society.

Conclusions

In their landmark review of built-environment studies, Lawrence and Low (1990, pp. 482–491) suggested that approaches based on the social production of built form and its impact on social action were the most promising new direction for anthropological research in this field. They further argued the need for this research to integrate the insights gained from environmental psychology and what they refer to as symbolic approaches—those emphasizing the role of built form in the communication of meaning. I have attempted to develop such an integrative approach by combining the topological emphasis and mathematical rigor of access analysis with a focus on how built environments transmit meanings through nonverbal communication. Its aim is to re-populate and "flesh out" the contexts in which past social interactions took place.

These contexts are a product of the manipulation of fixed- and semifixed-feature elements in a building's design. The location of walls and doorways enables particular patterns of movement and encounter. Yet it is also particular masonry types, doorway widths, architectural features and artifacts that social actors mobilize in order to produce meaningful contexts for interaction. Environmental psychologists have observed that the reading of behavioral cues requires the recognition of contextual relationships among these elements of the built environment. Thus, repetition of or redundancy in these cues helps ensure that social actors recognize the signs that remind them of "proper" or expected behavior. This does not ensure compliance, of course, and we should keep in mind that intended meanings can be misinterpreted, ignored or actively resisted. Nevertheless, the built environment serves as a rich and relatively durable medium for people to convey meanings that influence behavior and interaction and, through the processes of social reproduction and transformation, create and promulgate ideologies that advance their interests.

It is clear that access analysis has a key role in the study of this phenomenon, if used with care. In the end, however, it can give us no more than a partial glimpse of the complex interplay between architecture and ancient society. I have tried to emphasize that we must look beyond topology in order to contextualize the interactions that take place within built environments and understand their role in social reproduction. As the case study of the Ashlar Building at Enkomi demonstrates, such an approach can garner significant social insights from the fragmentary remains of ancient buildings.

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