

A SPACE SYNTAX ANALYSIS  
OF ARROYO HONDO PUEBLO,  
NEW MEXICO

1  
*Introduction*

*Societies are always spatial, and spaces are always social.*

—Thomas A. Markus, *Buildings and Power*

In this book I examine architectural changes among the ancestral Pueblo (or “Anasazi”) inhabitants of Arroyo Hondo Pueblo and other fourteenth- and fifteenth-century settlements in what is now the northern Rio Grande Valley of New Mexico. I develop the idea of spatial organization as an embodiment of social organization, employing “space” as an artifact that archaeologists might study more intensively than they generally have in the past. I believe built space must be treated as one of many independent variables in the study of culture. It may be the case that, as the archaeologist Richard Wilshusen (1989: 831) expressed it, “the origin of Anasazi architectural changes...is to be found in changes in social or economic organization,” but I want to begin with architectural remains and work backward in order to reveal something about social organization.

The Arroyo Hondo project, which generated the data I use in this book, began in 1970 and continued over nearly ten years under the

direction of Douglas W. Schwartz and the School of American Research in Santa Fe, New Mexico (Schwartz 1971, 1972; Schwartz and Lang 1973). As an integral part of the study, Schwartz and his team systematically excavated approximately 150 rooms representing almost all of the pueblo's 24 roomblocks. Researchers associated with the project analyzed the rooms, roomblocks, and adjacent plaza areas from a variety of perspectives, producing information about architectural features, settlement organization and growth, residential configurations, and the nature and uses of plazas. I cite their work frequently throughout this book.

It became clear to me early on that innovations in the way in which architectural space was arranged, particularly in the relative ease with which residents could gain access to different kinds of spaces such as living rooms and storage rooms, could be discerned from Arroyo Hondo's archaeological record. That spatial arrangements changed over time—from one of the site's two major components of occupation to the other—without a corresponding change in material culture was a second and somewhat unexpected conclusion. Ultimately, the study suggests that people change the manner in which they organize their built spaces in order to facilitate or inhibit social encounters. Whether such encounters are encouraged or discouraged at any particular time reflects the changing nature of the society being studied in terms of its internal (in this case, intrapueblo) and external social relationships.

### *THE SOCIAL AND THE SPATIAL*

The epigraph from Thomas Markus encapsulates the theme of this study, which is that the ways in which people structure their social relations relate to the ways in which they organize their spaces (Gutman 1972). In what follows, I navigate the interface between archaeology, a discipline that seeks to recover social information from material remains, and architecture, a discipline that designs structures that embody social information (Rapoport 1990:185–239). When considering the connections between archaeology and architecture, Amos Rapoport (1980:288) observed that “any artifact can be seen as the result of a series of choices among various alternatives. The design process, that is, the shaping of any kind of environment, can also be seen as a series of choices made from a set of alternatives. How these choices are made, what is included or excluded, and how various

elements are ranked in terms of high or low value, leads to specific environments.” A slightly different view was expressed by David Saile (1977:159), who wrote that “archaeology and architecture correspond in their concern with understanding the ways in which people, people-adapted ‘things’ (including architecture) and the external natural environment are related and how and why those relationships change over time.... A key factor which distinguishes the two disciplines, however, is the concern of architecture with spatial aspects of the built environment.”

Since the late nineteenth century, anthropologists and archaeologists have sought to investigate the congruence between social structures and built structures. Lewis Henry Morgan (1881), Victor Mindeleff (1891), and Emil Durkheim (1964 [1893]) all examined the ways in which behavior and built forms accommodate and reinforce each other, and they all argued that the social order is not only reflected but actually reproduced in the spatial ordering of a society (Lawrence and Low 1990:456). Every culture creates its own distinct architecture, but how these forms differ in time and space is a much easier question to answer than *why* they differ.

The orientation with which one approaches the relationship between a society and its built environment depends in some measure on whether one is trained in the design professions or the social and behavioral sciences. People trained in the former tend to focus on tangible forms, structures, and materials; those trained in the latter tend to focus on intangible ideational and cultural concepts. Overarching theoretical perspectives that might link the two groups have never been in short supply, but the use of specialized jargon and the proliferation of theoretical perspectives within each group have acted to separate practitioners rather than help develop a unified theory of “buildings and behavior” (Horgan 1995). Some efforts at a synthesis continue to be made (e.g., Markus 1972; Kent 1990; Blanton 1994), but the fundamental point of separation among the multiplicity of approaches seems to be between those that are largely descriptive, empirical, and intuitive and those that are theoretical, analytic, and predictive. Proponents of most theories seem to recognize correlations between built forms and social relationships (Pearson and Richards 1994), but they differ in their explanations of the nature, strength, and meaning of those correlations.

Among the authors who have attempted to synthesize ideas about architecture and behavior, Denise Lawrence and Setha Low, in their

essay “The Built Environment and Spatial Form” (1990), published one of the most comprehensive compilations of architectural, anthropological, and psychological theories. Despite its ambitiousness, this survey of epistemological and ontological orientations ultimately failed to offer any means of assessing the explanatory value of the plethora of theories. The authors acknowledged that theories of social production—those that “focus on the social, political, and economic forces that produce the built environment” together with “the impact of the socially produced built environment on social action”—are the most promising areas for anthropological inquiry (Lawrence and Low 1990:482). Their study, however, was more a compendium of what has been considered than it was the basis for a research design.

Nold Egenter, on the other hand, championed the development of what he called “architectural anthropology” (1992b:12), which “wants to look anthropologically at architecture and, in reverse, intends to carry out research into anthropology from the point of view of architecture” (1992a:22–23). He argued for a systematic approach to the study of architecture that was scientific in its orientation and cross-disciplinary in its scope, in some respects echoing the tenets proposed by practitioners of the New Archaeology three decades earlier. Irrespective of whether Egenter provided an outline for a new approach to architectural theory or merely restated environment-behavior themes originally investigated by Rapoport (1980, 1990) and others, he set forth the kind of interdisciplinary framework I used to structure the present study.

My basic assumption is that spatial use patterns are not the results of unconscious decisions but arise from purposeful responses to architectural needs that are consonant with environmental, demographic, and behavioral factors (Hillier and Hanson 1984; Horne 1994). By the same token, built forms influence residential behavioral patterns. An analysis of prehistoric pueblos reveals the existence of an underlying set of rules that explain how space was both arranged and correlated with the social and political behavior that characterized those societies. My ultimate conclusion is that it is possible to study the process of organizational change by analyzing the process of architectural change. The unifying logic that underlies spatial and social organization is discoverable through a quantitative approach developed by two British architects, Bill Hillier and Julienne Hanson, that is called *space syntax analysis*.

**SPACE SYNTAX AND ARCHITECTURE AS ARTIFACT**

In *The Social Logic of Space* (Hillier and Hanson 1984) and numerous other publications (Hanson 1998; Hillier, Leaman, et al. 1976; Hillier 1985, 1989, 1996; Hillier, Hanson, and Graham 1987; Hillier, Hanson, and Peponis 1987), the authors describe a philosophy that explains how social groups configure their spaces to satisfy fundamental social needs. They explain a set of techniques that reduce the spatial configurations of buildings and settlements to geometric networks described by series of numbers. Ultimately, the concept involves quantifying the multiple relationships among all the spaces in a system (Hillier, Hanson, and Graham 1987; Hillier 1996). A cornerstone of the theory is an assumption that the configuration of any network of built spaces is the spatial expression of the social relations of the group responsible for creating the network. The underlying logic of any built environment then becomes the arrangement of space, rather than the creation of buildings. In more concrete terms, “the primary purpose of a barn is not the edifice but the ordered spaces that the building provides for the storage of tools, resources and livestock. If the ordering of space determines modes of social interaction, then buildings have sociological meaning” (Ferguson 1993:36).

Hillier and Hanson conceive of architecture (or the process of creating a built environment) as one of several manifestations of an underlying cultural process. The domain of architecture is not separate from the domains of economics, politics, and social organization but relates to each cultural element as it, in turn, relates to every other element according to underlying structural principles (see, e.g., Hodder 1990: 56). Hillier’s writings have always stressed that space is a cultural artifact whose visible forms are arranged according to fundamental cultural paradigms that organize and direct social processes (Hillier 1996:91–93). All people with “normal vision” can visually experience space, or see it in three-dimensional terms, but the way in which any space is interpreted depends upon individual and culturally mediated views.

Operationally, space syntax analysis is based on the assumption that rules exist that control the manner in which people segregate and connect space. It rests on a conception of the built environment that considers spaces in terms of their boundaries (i.e., whether they are open or closed) and relationships (i.e., whether they are contiguous or discontinuous). Physical structures are reduced to simplified networks of

*nodes* (spaces) and *linkages* (doors, corridors, roads) that can be analyzed in terms of people's potential ease of movement through the network and, ultimately, the potential for social interaction to take place in the structures.

Architectural remains constitute some of the best examples of cultural activity found in the archaeological record. They reflect purposeful patterns that can be described in terms of sets of relationships among built forms that result from recurrent human behaviors. Ancestral Pueblo architecture in the northern Rio Grande has been characterized as irregular arrangements of regular forms in sequences that responded to critical needs such as shelter, defense, and spiritual well-being (Hieb 1992; Swentzell 1992; Wilcox and Haas 1994), but there is also a coherence in those arrangements that is not readily apparent. In its simplest terms, architecture impresses a social "fingerprint" upon the landscape, a behavioral code that can be read and interpreted. I hope to demonstrate that space syntax analysis is one way to "read" those fingerprints, and the particular fingerprint to which I have applied the methodology is Arroyo Hondo Pueblo.

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Excerpt from

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By Jason S. Shapiro

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