

## 2 A Step Toward a Grammar of Space: Domestic Space Use in Zapotec Villages

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### *The Problem*

Twenty years ago, Edward Hall (1966) pointed out that culture shapes the form, function, and meaning of space. Subsequent refinements of this idea have focused on more precise demonstrations of how the spatial arrangements of material culture are culturally patterned. Kent (1984) made an extensive comparison between Navajo, Spanish-American, and Anglo-American house lots in terms of activity area arrangement. She noted variation among house lots associated with cultural differences and the degree of acculturation of the occupants.

Since space use has a strong cultural component, it seems reasonable to expect that it might be amenable to analyses similar to those used to investigate less tangible aspects of culture. Colby (1975) argues that linguistic theories and methods rank among the most successful approaches to deciphering cultural behavior, and linguistic analytical frameworks have been applied to space use patterns in order to better understand them.

Hillier et al. (1978), focusing primarily on community and large-structure patterning, developed a general syntactic theory of spatial organization complete with its own metaspacial notation system based on a broad

range of ethnographic and historical data. Though their work is innovative, it is typological and overlooks distinctive attributes of individual cultures.

Glassie (1975), on the other hand, presents a method more appropriate for understanding the spatial arrangements of a particular culture. Using a generative grammatical approach, he developed a set of rules to describe the spatial structure of folk housing in central Virginia from colonial times to the present. Drawing his evidence from historical records and literary sources, Glassie demonstrated connections between changes in the rules of space use and changes in the philosophical outlook of American vernacular builders. His approach holds much promise, and the level of detail to which he carries his rules is certainly that required for a generative grammar. We hope to show that such complexity is unnecessary for an adequate description of the rules of domestic spatial arrangement.

More strictly archaeological is the work of Fritz (1978). Taking his lead from Colby, he suggests that grammatical or syntactic relations characterize many other aspects of culture besides language. Fritz identifies architectural space as iconic and discusses the mythological meaning associated with architecture. He then applies this perspective to the settlement pattern and site layouts of Chaco Canyon to derive a coherent, though abstract, set of organizing principles for spatial arrangements in the Chaco culture. He posits that these principles resided in the heads of the former inhabitants of the canyon.

In keeping with the growing interest in structural, cognitive, and symbolic archaeology, as evidenced by Fritz's study and by the recent works of Hodder (1982a, 1982b) and Fletcher (1978), we will present in this paper some insights gained when we applied a linguistic approach to ethnographic data on the use of domestic space in a region of southern Mexico. We shall identify several rules for the use of Zapotec domestic space within a single village and compare one of these rules to a sample of six villages. We will then compare the patterning discovered in our contemporary study with precolumbian examples recovered through excavation. We conclude with suggestions for subsequent research.

### *The Community*

The location selected for testing our notions of a grammar of domestic space use was a relatively large village of Zapotec-and Spanish-speaking peasant Indians known as Villa Diaz Ordaz. Diaz Ordaz was chosen as a research site because we have copious ethnographic data on the village covering almost two decades and representing the product of at least six ethnographers.<sup>1</sup>

Diaz Ordaz lies about 30 km southeast of Oaxaca City and 6 km north of the Panamerican Highway in the Tlacolula wing of the Valley of Oaxaca (Figure 2.1). Most of its 3000+ inhabitants are peasant farmers who supplement their meager incomes with wage labor outside the community. The village is subdivided into three administrative sections that in turn are com-

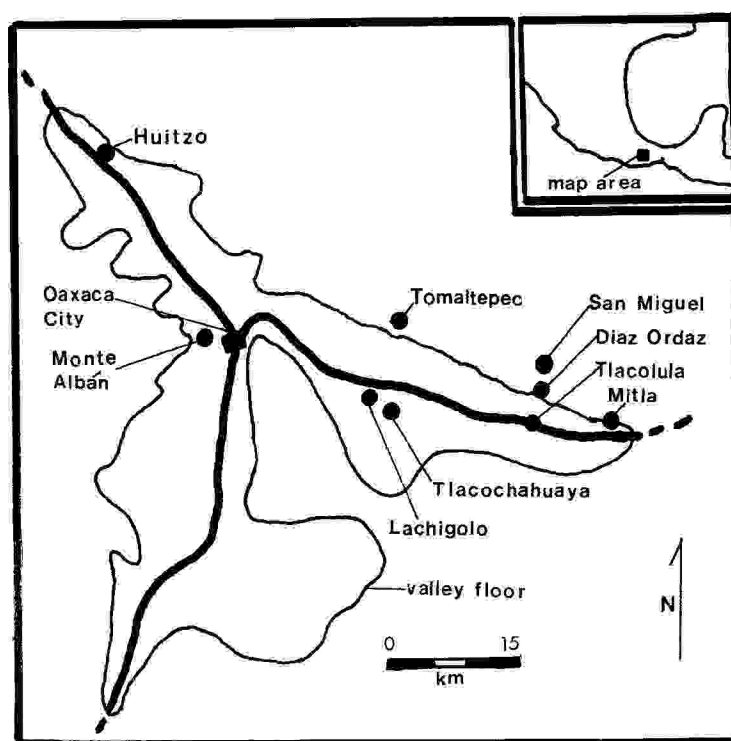


Figure 2.1. The Valley of Oaxaca, showing locations mentioned in the text (after Figure 12.1, this volume)

posed of their constituent households, most of which constitute some variation of a nuclear family. Household affiliation changes with marriage, following a patri-neolocal pattern that fosters independence among newlyweds (Downing 1979). Household composition also changes with the birth and death of the members and for other nondemographic reasons (such as feuds or extended visits).

Díaz Ordaz residents recognize communal, *ejidal* (a government recognized cooperative group), and private property. Private property is transferred between generations by bilateral, partible inheritance (Downing 1973, 1977). Villagers express a strong corporate identity, which is behaviorally reinforced by participation in their *cargo* system (Ugalde 1973), a graduated succession of obligatory public service offices in both the village civil and religious hierarchies, and through highly endogamous marriages.

Like the settlement patterns of most Oaxaca Valley Zapotec villages, homesteads in Díaz Ordaz are clustered around a central plaza at which the major streets converge (Figure 2.2). The central plaza is bounded by large private or public buildings: the town hall (*municipio*) on the north, the church

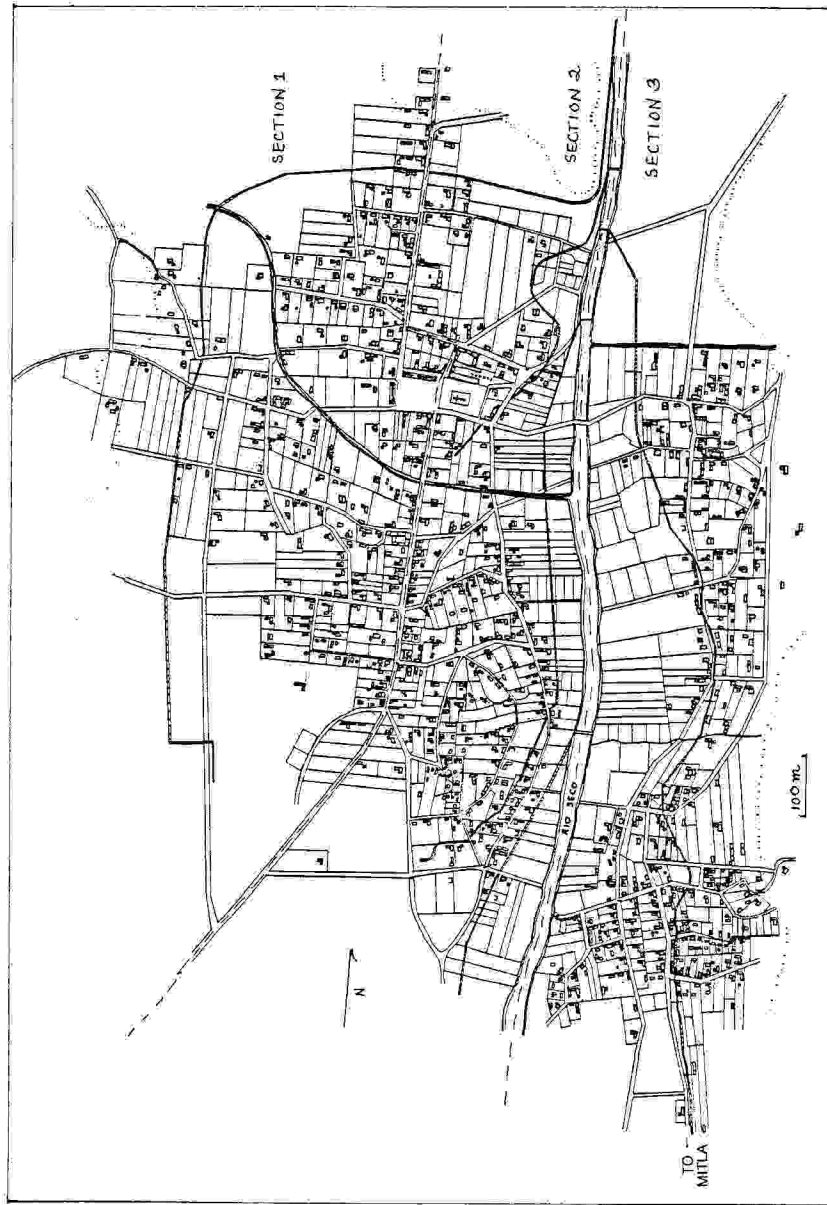


Figure 2.2. Map of Villa Diaz Ordaz, 1981

on the east, a small courthouse and jail (*alcaldía*) on the west, and several privately owned houses on the south. The plaza is the center of village public activity, the place where all major village ceremonies occur, and a symbol of the village to its inhabitants. From an outsider's perspective, the plaza might be thought of as an island of public activity in a sea of private residences. It should be noted, however, that unlike other Zapotec communities, the village was not rebuilt on an earlier, preconquest site.

Private residences, called *solares* (Figures 2.3 and 2.4 provide examples of *solar* plans), surround the plaza, with the majority lying to the south and east. To simplify the discussion, we shall refer to the community's domestic spaces, the *solares*, as house lots. The settlement pattern is bisected from north to south to the east of the plaza by the Rio Seco; however, house lots on both sides of the river are essentially the same. Several irrigation ditches cross the settled area, running roughly parallel to the river. House lots are clearly distinguished by adobe walls or fences of cane or cactus, a pattern identifiable in Frederick Starr's (1899:Plates LXXXII and LXXXVI) photographs from the last century. The house lot and its associated main house become physical symbols of the household to its residents (Sutro 1983).

Except for a few vacant house lots kept under cultivation, the majority have at least a one-room house called a *pieza* (designated as a "living room" on the plan maps). For the remainder of our discussion, the *pieza* will be referred to as the main house. Apart from the main house, trees, gardens, and other structures may be found in a house lot, all of which reflect the wealth of a household and the length of residence (Sutro 1983; Sutro and Downing 1986). Other common structures include additional dwelling spaces, such as kitchens and sleeping rooms; storage buildings for corn or fodder; hygienic facilities, such as showers and latrines; animal husbandry spaces and structures, such as chicken coops and bull corrals; and commercial structures, such as slaughter houses and shops. Structures are commonly constructed of adobe with tile roofs, although pens and sheds are often cane-sided with tar paper roofing. Since the mid-1950s, wealthy households have been constructing buildings with brick and concrete roofs and walls.

The spatial organization of residences is a tangible manifestation of group and individual decisions. In many ways, construction of the main house is the outcome of community as well as of individual decisions. Since building loans or mortgages are unavailable in Diaz Ordaz, most of the main houses were constructed by means of a communal sharing of labor and materials known as *guelaguetza* (Beals 1970). Relatives, *compadres* (godparents), and friends band together in what American farmers used to call a barn raising, whereby a group of volunteers constructs a dwelling for one member of the community in a few days. The contributors provide building materials, labor, food for the work force, and cash assistance to the home builder, who is expected to repay in kind. The owner will have probably collected a sizable amount of materials on his own before the house raising occurs. The accumulation of construction materials may take place over sev-

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## SOLAR 42-6

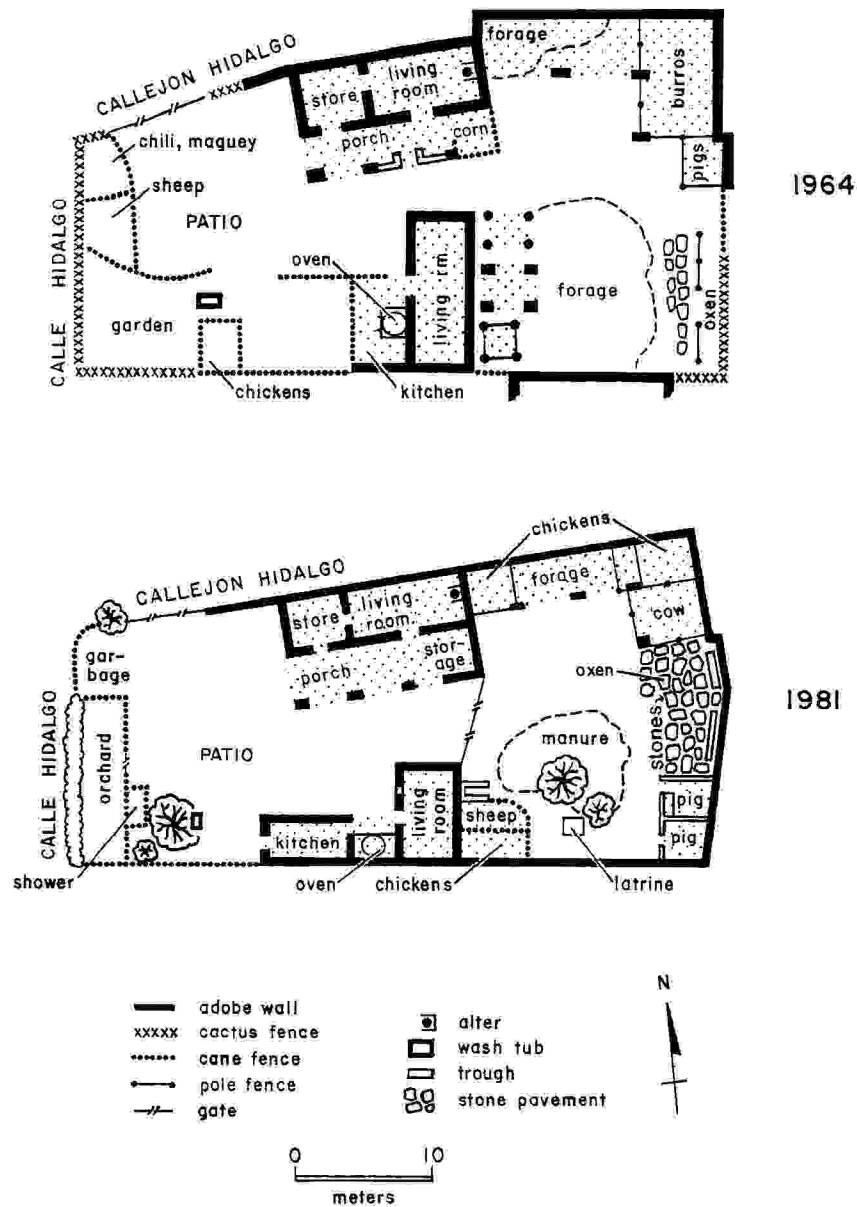
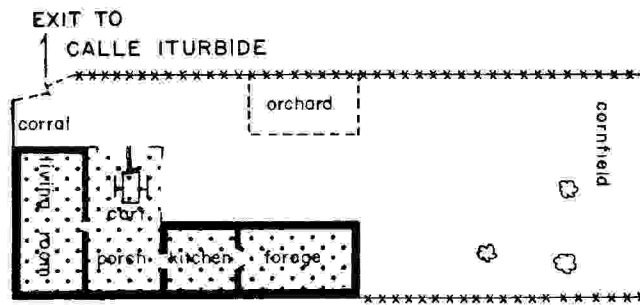
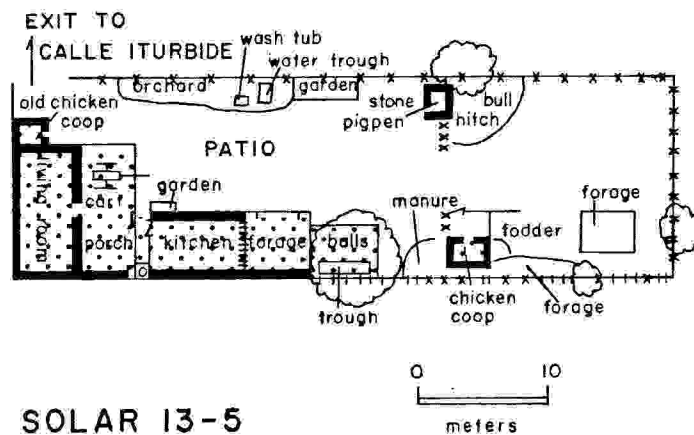


Figure 2.3. Solar 42-6 in 1964 (after Quinn 1964) and in 1981

1965



1981



### SOLAR 13-5

Figure 2.4. *Solar* 13-5 in 1965 (after Ugalde and Molony 1965) and in 1981

eral years, and it is common to find stacks of adobes and beams lying in a house lot. Further improvements are usually made incrementally as funds become available.

The massing of relatively unskilled labor for a single event tends to favor standardization because a "standard" home is readily built with minimal supervision. Attempts to deviate from the traditional pattern in Díaz Ordaz, such as an unusual placement of a window, generated considerable discussion and occasional criticism among the volunteer laborers, who provided numerous reasons why the norm should not be violated. The most commonly heard criticisms were "it would take more time" and "it might not work." The opinion of the unpaid labor force usually prevailed. On lesser elements of construction, such as animal pens and kitchens, the discussion

group was considerably smaller and might be limited to the members of the household (i.e., a husband and wife or a few close relatives or *compadres*).

### *A Grammar of Space*

Within the house lot, house construction and space utilization are subject to shared and sometimes unconscious norms or rules akin to those that structure language. In his work on vernacular American homes, Glassie (1975) posits a set of rules for the use of a particular kind of domestic space—architectural space. His rules constitute what he calls *architectural competence*, modeled after Chomsky's (1968) "linguistic competence." In turn, according to Glassie, just as the linguist studies "linguistic performances" or utterances to derive a notion of the rules for linguistic competence in a language, the student of space use should be able to study "architectural performance" to derive an idea of architectural competence. In this case the performances from which the rules must be inferred are the actual layouts of buildings. We utilize the same premise in our work on domestic space use in Diaz Ordaz, but we prefer to broaden the concept of architectural competence and performance to spatial competence and performance.

Unlike language, which is in use all the time, the manipulation of material space is a relatively infrequent event: for example, we have had the opportunity to directly witness only a handful of "house raisings" over the past 20 years of fieldwork. On the positive side, however, is the fact that the material evidence of these building decisions remains.

In another sense our problem is structurally similar to that of the linguist who, given only utterances, must reconstruct the underlying grammatical rules of a language. Just as in language, the built environment may not reflect precisely the ideal patterns as they are expressed in the architectural rules. Spatial analysis is confounded by two factors: the nature of cultural rules themselves and the influence of technological and environmental constraints. As the ethnomethodologists (Mehan and Wood 1975) point out, cultural rules leave the actor some, albeit minor, latitude for choice of action in any particular situation—what is termed the *indexical* nature of cultural rules. This quality of cultural rules is highly adaptive given the fact that environmental constraints, and sometimes technological ones, may hinder the actor from achieving what might be considered the optimum outcome (e.g., when a large rock outcropping prevents the placement of a house in a particular, ideal location). From our perspective, the key problem in analyzing the grammar of space consists of determining the underlying rules for the use of space given the fact that all we can observe are imperfect representations in recoverable material culture of the application of these rules.

Our objective has been to formulate a set of rules by which a person could construct a traditional, culturally acceptable house lot in Diaz Ordaz. Following Glassie's (1975) lead, we assume that the villagers' use of space



may be described using some cluster of *interrelated* rules. We stress the inter-relatedness of rules because this implies that previous spatial decisions will influence future spatial decisions.<sup>2</sup>

To reiterate, the ideal patterns people attempt to express when they arrange space roughly parallel what Chomsky (1968) refers to as linguistic competence. *Spatial competence* refers to the knowledge used by an ideal, fluent manipulator of space inhabiting an ideal, completely malleable environment. Neither such a manipulator nor such an environment exists, however. Instead, archaeologists witness *spatial performance*, which is the material product of the expression of spatial competence under various limiting conditions, both environmental and technological (see Altman and Chemers 1980 for a fuller exposition of these relationships). As with language, breaches in spatial competence are frequent and do not mean that a grammar is inaccurate.

In this paper we employ a simple methodology, arguing that the rules we provide are necessary to begin to re-create an approximation of Zapotec spatial competence. A simple test of the adequacy of these rules can be performed by attempting to generate the spatial arrangement of a Zapotec house lot using only a few rules. The closer our rules come to re-creating the structure of actual Zapotec house lots, the closer our rules come to expressing a Zapotec spatial grammar.

#### *Syntactic Rules for Use of Diaz Ordaz Domestic Space*

To facilitate our task, we divide the rules of spatial grammar in Diaz Ordaz into seven categories: those necessary to determine house lot context (the spatial background against which subsequent rules are applied), the configuration of spatial units, main house location and alignment, expansion of construction, functional clustering of structures, spatial separation of clusters, and patio focus of structures. Information given in parentheses refers to the observed frequency of conformity with the stated rule or other relevant information.

##### 1. The house lot context

- a. House lots tend to be rectangular. (House lots ranged in length from 13 to 136 m and in width from 12 to 60 m, with considerable variation.)
  - b. House lots are bounded by fences. (Fences surrounded all house lots. Approximately half were constructed of perishable [cane, brush, or cactus] and the other half were formed of permanent [adobe, brick, or chain link] materials. Frequently, a house lot would be fenced with some combination of the two.)
  - c. House lots have one or more sides adjacent to a public road or footpath.
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- d. One or more of the house lot boundaries has a cane or metal gate on the side or sides adjacent to a public road or pathway.
  2. Spatial units
    - a. Within a house lot, structures have a rectangular ground plan. (Main houses varied between 9 and 10 m in length and 4 and 5 m in width. Few structures were square except for kitchens and out-houses.)
    - b. The basic unit, the one-room, one-story rectangular main house, has a door only in the middle of one of its longer sides.
    - c. Structures other than the main house (storage facilities, commercial spaces, other dwelling areas, *temescales* [sweatbaths], etc.) will not exceed the main house in dimensions, except for large animal corrals and the new chicken coops and pigpens built for commercial purposes.
  3. House location and alignment
    - a. The door of the main house is oriented towards either the south or the west regardless of the location of the residence entrance gate. (In the Diaz Ordaz 1981 sample, 53 percent of the main houses were oriented to the south and 42 percent to the west. Parsons [1936:23] states that the houses in Mitla were similarly oriented because of the prevailing winds from the east and the bad storms from the north. Village informants reported that similar factors influenced house orientation in Diaz Ordaz; note discussion of other nearby communities below.)
    - b. Structures will be placed adjacent to a boundary wall or fence; south-facing houses will abut or lie close to the northern boundary of the house lot, and west-facing houses will abut or lie close to the eastern one.
    - c. The house will either (1) have a back or a side wall abutting the street side of the residence boundary or (2) be found along a boundary away from streets. (Fifty-one percent conformed to variant 1 and 49 percent fit variant 2 in the 1981 sample.)
    - d. The main house will never be placed on a boundary adjacent to the main house in an adjoining house lot. (This rule no doubt exists to ensure privacy.)
  4. Expansion of construction
    - a. New dwelling units and other structures have no internal partitions.
    - b. New structures or modules will tend to lie in a linear or rectilinear arrangement with respect to the main house, with rears abutting boundary walls much like the tiles in a game of dominos. The major exception to this rule will be the porch, which usually lies parallel to and in front of the entrance to the house.
    - c. The ends of new structures will abut those of previous structures in "domino" fashion, thus eliminating the expense and extra labor needed to construct additional walls.
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- d. There will be little or no internal access between modules except in the case of the porch. Access to modules will be gained from the outside, with most structures being open at one point along their length except in the case of the porch, which will have access on all sides unobstructed by existing structures.
  - e. Orientation of doorways of additional structures will not be as important as in the main house.
  - f. Most new structures will either face the same direction as the initial house or face the patio space in front of the house.
5. Functional clustering
- a. Structures with similar functions (e.g., dwelling, storage, animal husbandry) will tend to be found in proximity within a single house lot. (For instance, dwelling structures were found to be clustered in 91 percent of the cases sampled in 1981, and animal husbandry spaces were similarly clustered in 56 percent of the cases. Functional clustering makes sense when viewed from a "least effort" perspective, but the proximity of dwelling spaces is particularly apropos given the emphasis on household unity in Diaz Ordaz.)
  - b. Storage structures for items associated with domestic activities (e.g., food or tools), hygienic facilities (above the level of the *excusado* or human waste elimination enclosure), and commercial activity spaces (e.g., stores and mills) will be nearer dwelling areas; sheds for animal forage will be nearer animal facilities.
  - c. Horticultural activity areas (gardens and orchards) will show no clustering tendency with respect to animal or dwelling areas.
6. Spatial separation
- a. Functional clusters will tend to be spatially distinct (71 percent of the 1981 sample). The animal husbandry cluster, particularly if bovines are involved, will either be located at the opposite end of the yard from the dwelling cluster or be physically separated by a fence of some sort.
7. Patio focus
- a. As buildings are added to a house lot, dwelling structures will tend to form a U-shaped or an enclosed patio configuration.<sup>3</sup>

It should be noted here that our grammar deals strictly with traditional housing. A change in domestic spatial structure in contemporary Diaz Ordaz has occurred recently: brick and concrete houses with planned internal divisions and interconnecting rooms, like those in urban Mexico, are replacing traditional designs. This prestigious form of housing is becoming more common locally owing to an increase in disposable income derived from wage labor outside the village and to the increased availability of durable building materials. We are planning research to determine the overall impact of this new housing plan on the traditional domestic spatial grammar.

### *Patio Focus*

To illustrate some of the historical and social correlates of these rules, we focus upon the final rule. As might be anticipated, the development of a patio focus is closely related to the number of modules or units in the house lot (Table 2.1): the more units there are in a lot the more likely it is that a patio focus will occur. Since the development of a house lot is an historical process, it should be expected that a patio focus is more common among house lots that have been inhabited longer (Table 2.2). Finally, the patio focus appears to be more common in house lots occupied by two or more conjugal dyads (Table 2.3), demonstrating the close association between social organization and the grammar of space.

### *Correspondences Between Spatial and Linguistic Patterns*

Diaz Ordaz is one of more than 300 villages in the central Valley of Oaxaca, the majority of which are inhabited by Zapotec peasant Indians or their *mestizo* descendants. Using data from the Stanford *Oaxaca Archives*, from four other valley villages, and from Parsons's (1936) *Mitla*, a comparison was made among villages of the structure of domestic space use. The four villages from the archives—San Pablo Huitzo (Allen 1966; Figure 2.5), San Francisco Lachigolo (Truey 1967; Figure 2.6), Tlacoachahuaya de Morelos (Reichman 1964; Figure 2.7), and San Miguel del Valle (Klug 1965; Figure 2.8)—were chosen because of the attention to detail in the plan maps drawn by the ethnographers. Although it is impossible to tell if the samples from the archives are representative of whole villages, in each case several blocks were mapped so that the direction of the street side of the *solares* varied considerably.

Huitzo is a largely *mestizo* farming village located on the Panamerican Highway in the Valley of Etla approximately 30 km from Oaxaca City and even farther from Diaz Ordaz (Figure 2.1). Lachigolo and Tlacoachahuaya are neighboring agricultural villages fairly close to Oaxaca City, just off the international highway in the Tlacolula Valley. Mitla is a trading, farming, and weaving town and a tourist center located adjacent to Diaz Ordaz and

Table 2.1. Comparison of dwelling cluster size and occurrence of patio focus at Diaz Ordaz (based on 1981 data)

		Patio Focus	
		Absent	Present
Number of Units	1-3	50*	4
	4-15	30	19*
$\chi^2 = 12.82$ , $df = 1$ , $p = 0.0003$ . $n = 103$ house lots.			

\* indicates a cell with an actual frequency that is higher than expected

Table 2.2. Comparison of house site age and occurrence of patio focus at Diaz Ordaz (based on 1981 data)

		Patio Focus	
		Absent	Present
Age of	< 17 years	23*	0
House site	> 17 years	53	23*

$\chi^2 = 7.45$ ,  $df = 1$ ,  $p = .006$ ,  $n = 99$  house lots.

\* indicates a cell with an actual frequency that is higher than expected

slightly farther away from Oaxaca City. Finally, San Miguel del Valle is a small farming village located just upstream from and in the same valley as Diaz Ordaz, on the road that passes through Diaz Ordaz and leads to El Carrizal in the mountains.

Certain spatial rules appear to be common to all of these Oaxaca Valley villages. Construction is modular, and residences exhibit a functional clustering of modules and spatial separation of dwelling and animal husbandry clusters. Huitzo structures appear to exhibit more complicated planning than those in the other villages, however.

In other ways the towns differ significantly. Table 2.4 summarizes the cardinal orientation of the entrances of the main houses in each town.<sup>4</sup> We note that the geographical proximity of villages seems to correspond to an interesting pattern. The closer any two villages are, the more similar the cardinal orientations of their houses. For example, Diaz Ordaz and San Miguel are only 1.5 km apart and share similar orientation patterns. The next closest village to these two is Mitla, which appears closer to their pattern than villages farther away. Linguists have long noted the dialectal similarity in the Zapotec spoken in these three villages, but this is the first indication of underlying cultural similarities—in this case in the grammar of space. Twenty kilometers southwest, toward Oaxaca, two neighboring villages, Lachigolo and Tlacoahuaya, exhibit remarkable similarities to one another in their patterns but a distinct orientation from that of the Diaz Ordaz/Mitla/San

Table 2.3. Comparison of house lot residents and occurrence of patio focus at Diaz Ordaz (based on 1981 data)

		Patio Focus	
		Absent	Present
Number of	0-1	67*	14
Conjugal Dyads	2 or more	13	9*

$\chi^2 = 4.289$ ,  $df = 1$ ,  $p < 0.05$ ,  $n = 103$  house lots.

\* indicates a cell with an actual frequency that is higher than expected

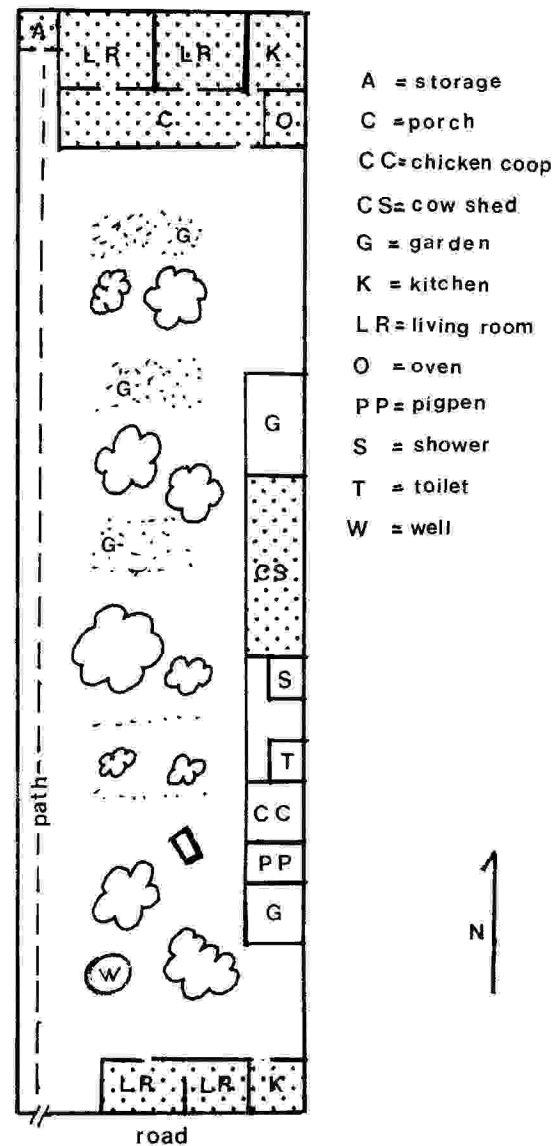


Figure 2.5. Solar I-12 from San Pablo Huitzo (after Allen 1966)

Miguel cluster. As might be expected, linguistic differences seem greater between these two villages and the Diaz Ordaz/Mitla/San Miguel cluster than between the two villages themselves. Huitzo appears to be the exception that proves the rule. Located another 20 km farther away and in another wing of the valley, Huitzo has a pattern of orientation that is the least

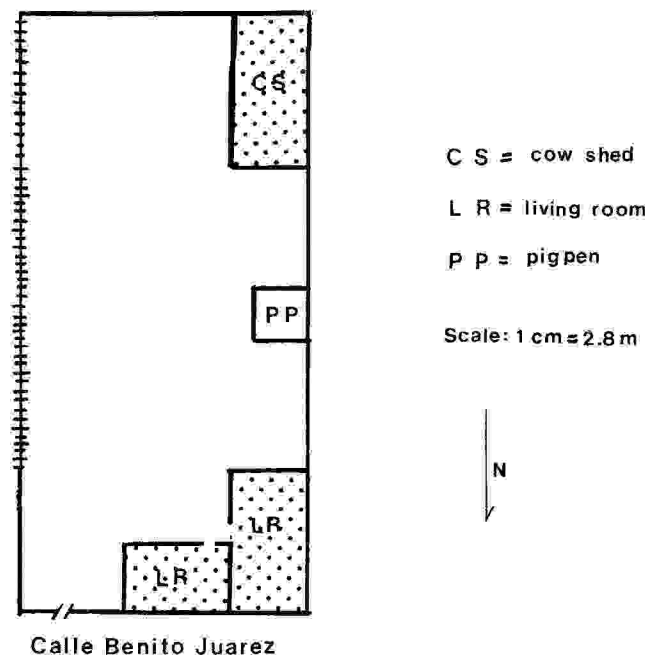


Figure 2.6. Solar 1-21 from San Francisco Lachigolo (after Truey 1967)

similar to those of the rest of the group; although now only Spanish is spoken in the community, Huitzo is recognized as having an historical affiliation with Mixtec, a distinct language from that of the five Zapotec villages. These intervillage differences lead us to think that further explorations of the relationship between dialectal differences and grammars of space might yield useful insights for historic and perhaps prehistoric archaeology.

#### *Continuities with the Past*

One obvious application of the approach we are advocating is to the investigation of Oaxacan prehistory, particularly since the Zapotec of today are assumed to be direct descendants of the inhabitants of the valley in precolumbian times (Whitcotton 1977). Kowalewski et al. (1984) present evidence of a continuity in house lot and house sizes from the Formative period to the present in the Valley of Oaxaca. Could the same rules be posited for the syntactic rules of spatial patterning? Whalen (1983, this volume) and Winter (1974) provide the most comparable data on precolumbian spatial structure in the valley. From the information they provide it is possible to make a preliminary comparison between the structure of domestic space use in precolumbian Oaxaca and that of today.

Whalen (1983, this volume) presents data from Early and Middle For-

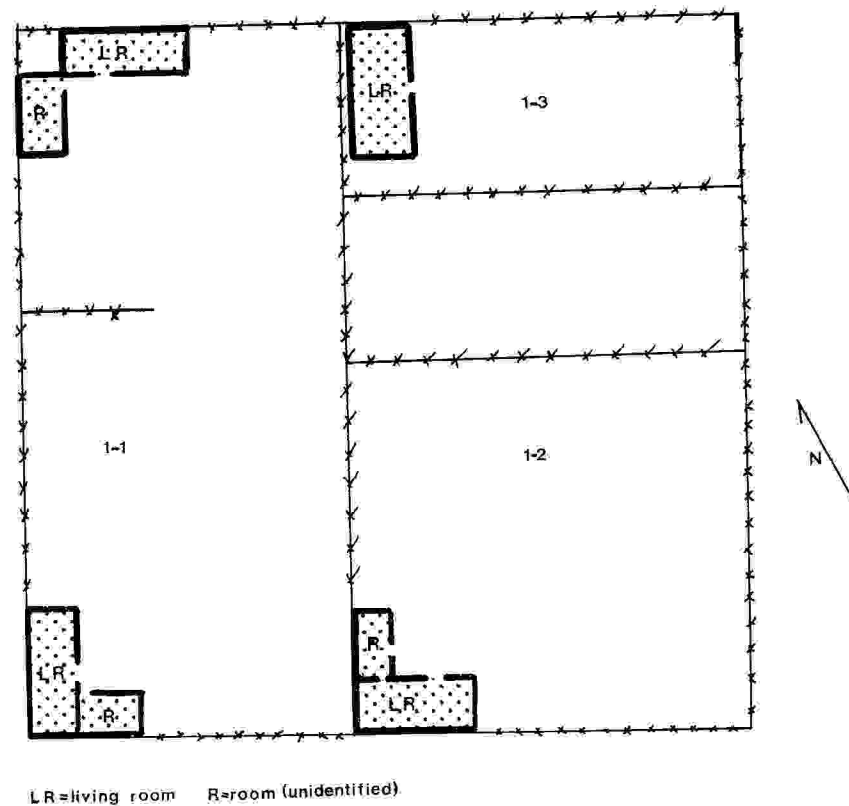


Figure 2.7. Block 1 from Tlacochahuaya de Morelos (after Reichman 1964)

mative Tomaltepec (San Jose and Rosario phases, ca. 1150–500 BC). At this rural site in the valley, yard sizes or property boundaries were not recoverable, but judging from the regular spacing between dwellings, the concept of a yard might be inferred. The early (San Jose phase) dwelling units were rectangular but smaller than those recorded at Diaz Ordaz. The later Rosario phase dwelling approximates those of Diaz Ordaz in length, but it is not rectangular and is only half the width of the modern houses. The Rosario phase structure illustrated in this volume (Figure 12.3) is the only one from which the dwelling orientation can be determined; its doors appear to face south and east (like the present-day orientation of houses in nearby Tlacochahuaya). The early structures seem to have been single modules, but later construction is not modular. The Rosario phase structure is L-shaped with no apparent internal division but with a courtyard or patio focus. The wings of the Rosario phase structure seem to have served similar functions; associated features include a storage pit and the burials. The fact that it is not possible to ascertain whether any additional perishable structures existed



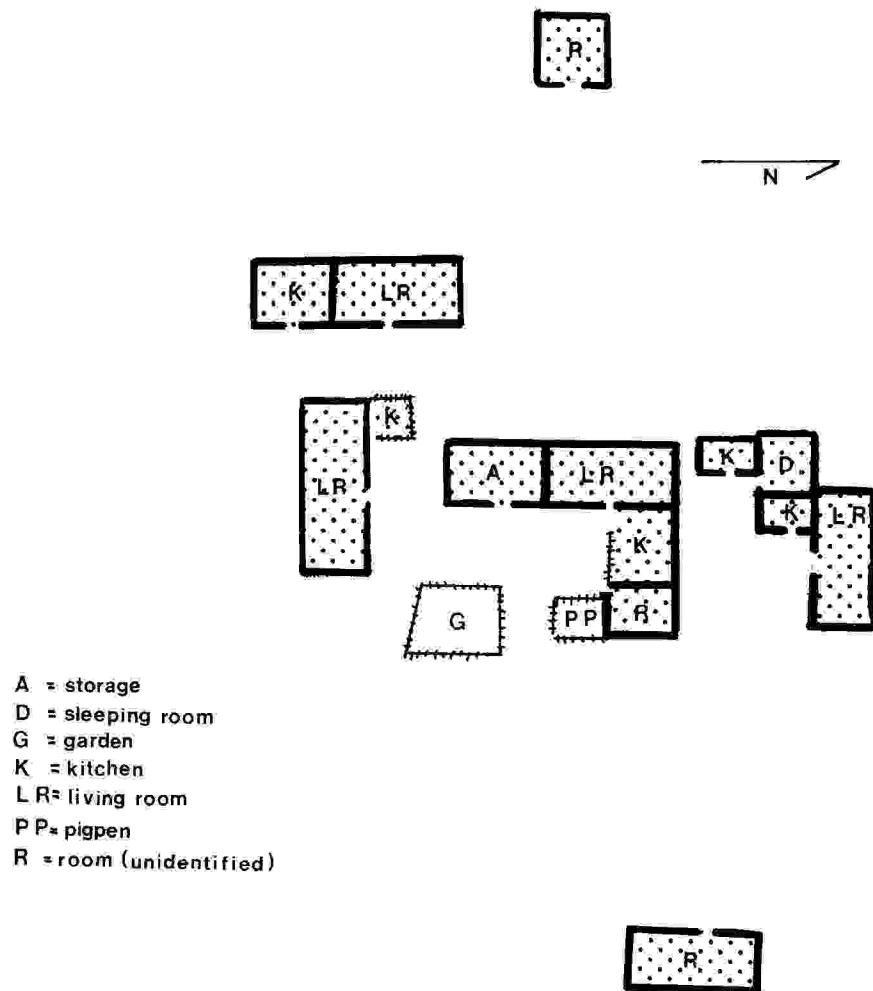


Figure 2.8. Block 1 from San Miguel del Valle (after Klug 1965)

in the Rosario phase yard makes it difficult to discuss spatial separation by function of structures.

Winter (1974) presents Middle Formative to Early Classic (Monte Alban periods Ia-IIIb, ca. 500 BC-AD 600) data from the urban site of Monte Alban. Information on topography for Monte Alban is easily recoverable (see also Blanton 1978); unfortunately, as at Tomaltepec, yard sizes or property boundaries are not. From the archaeological evidence it is impossible to tell wheth-

Table 2.4. Orientation of main houses in six Oaxacan villages

Cardinal Orientation of Entrance to Main House	Percentage of Main Houses					
	Villa Díaz Ordaz	San Miguel del Valle	San Pablo Mitla	Tlaco- chahuaya de Morelos	San Francisco Lachigolo	San Pablo Huitzo
North	2	11	11	13	29	10
East	3	14	5	58	35	16
South	53	41	45	24	26	68
West	42	34	39	5	10	6
n =	103	64	596	38	34	31

er demarcated boundaries existed between residences. The early (Monte Alban Ia-II, ca. 500 BC–AD 300) basic unit, assumed to have been a dwelling, has the same layout as the modern house, although it has only half the floor area. From the data presented it is difficult to determine the preferred orientation(s) of the dwelling units. Winter's "household cluster" (see also Winter 1976)—a set of material traces of residential activity, including wall foundations, burials, pits, and so on, which are frequently recovered in close spatial association (Figure 2.9a-c)—probably corresponds with our term, *dwelling cluster*. Construction of the later (Monte Alban Ic-IIIb, ca. 200 BC–AD 600), partially closed household clusters (Figure 2.9b) seems to be modular but not arranged in domino fashion. Moreover, modules seem to be identical, which, along with artifactual data, suggests identical functions. Of course, perishable and as yet unidentifiable structures might have been attached to basic units in a linear fashion. Clustering of features (e.g., graves and pits) with dwelling structures occurs, but there does not appear to be much spatial separation between functional clusters. All Monte Alban IIIb residences have a closed cluster arrangement with a patio focus (Figure 2.9c).

Some of the grammatical rules we have identified for traditional Díaz Ordaz and other modern Zapotec communities may have been operating as early as the Formative period. At different times in the history of the Valley of Oaxaca, structures from both Tomaltepec and Monte Alban appear to have exhibited the spatial unit, functional clustering, and patio focus rules. The other rules were either not operating or cannot be inferred from the extant data.

One major question overshadows our conclusions about the relationship between ethnographic and archaeological materials: How much was the spatial grammar of the Zapotec influenced by the Conquest? Whitecotton (1977) recounts the upheaval that accompanied the early colonial period. Epidemics of European diseases brought about depopulation, which in turn "brought about the consolidation of many towns into single entities, brought about the extinction of some communities, and created towns with no pre-

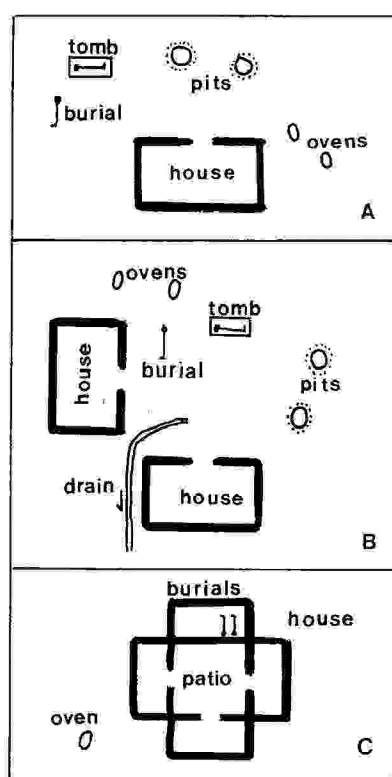


Figure 2.9. Schematic representation of three kinds of household clusters found at Monte Alban (after Winter 1974:982)

Spanish antecedents" (Whitecotton 1977:193). Diaz Ordaz was one of the new settlements; as such, it was subject to a myriad of Spanish influences. Certainly the organization of the town around a plaza is taken from a Spanish model, and the introduction of new domestic animals to the rural house lot by the Spaniards no doubt had an effect on space use as well. How much the Spaniards were able to influence the domestic space use rules of the Zapotec in Diaz Ordaz or elsewhere is an issue that deserves the attention and cooperation of archaeologists and ethnohistorians alike.

### *Summary*

The material manifestations of human behavior reveal a high degree of patterning. Our modest contribution has been to explore the possibility of developing a grammar of space to express the systematic nature of this patterning. We have presented a set of interrelated, sequential rules that pertain to the house lot and its context, spatial units, orientation and alignment

of the main house, expansion of construction, clustering of structures by function, separation of clusters, and the central courtyard focus of structures. By following these rules, any individual ought to be able to design a perfectly acceptable house lot for the village of Diaz Ordaz, Oaxaca.

We also explored differences in grammars of space among Valley of Oaxaca communities and noted many similarities in community rules, as well as a peculiar difference. We observed that the configuration of the alignments of the main houses of each village was more alike among communities that shared similar Zapotec dialects than between dialectal groups.

Finally, we explored the possibility of there being some continuity from precolumbian times to the present in the rules of Zapotec space use and discovered possible similarities in the rules governing spatial units, functional clustering, and patio focus between the past and the present. We concluded, however, that because of the influence the Spaniards undoubtedly had on Zapotec culture, further research is necessary before a more complete understanding of prehispanic Oaxacan grammars of space use is possible.

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### *Notes*

1. Between 1964 and 1967 students participating in the Stanford Summer Ethnographic Field School drew plan maps of the *solares* and collected household demographic data in the village of Diaz Ordaz. Among the ethnographers who collected such data were Naomi Quinn (1964), Antonio Ugalde and Carol Molony (1965), Merida Blanco, and Theodore Downing. The products of their efforts can be found in the *Oaxaca Archives*, a collection of research reports and publications about the people of Oaxaca written by the faculty and students of the Stanford Summer Ethnographic Field School and subsequently edited by Merida Blanco and Theodore Downing. The *Oaxaca Archives* are available at the Oficina de Estudios de Humanidad del Valle de Oaxaca in Oaxaca, Mexico, and at the Department

of Anthropology, Stanford University. In addition, Downing has conducted research in the village over the past 20 years, and in 1970 he drafted a village map. Sutro worked in the village from November 1980 to August 1981, noting changes in the contents and arrangements of the *solares* previously studied as well as collecting corresponding demographic and economic data. In all, comparative information on 105 *solares* was collected, representing a sample of 16 percent of all inhabited house lots (Sutro 1983).

2. In this discussion, we beg the issue of where these rules are located, i.e., whether or not they are in the natives' heads or in the ethnographers' heads, or are a result of the natives' behavior. Such questions are unrelated to our approach.

3. The patio focus is a variant of a cultural theme reflected at a larger level in the plaza focus of the village and is a widespread theme in settlement organization (see Wood 1971 for an elaboration on this theme).

4. Interestingly, in no case is north the preferred direction of main house orientation. Jim Greenberg (personal communication,

1983) suggests that this may have to do with the association of north with death, a common belief in other parts of Oaxaca but one not explicitly expressed by Diaz Ordaz villagers. A more commonsensical explanation is that villagers prefer to protect themselves from the cold blasts of wind emanating from the north in the winter.

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