

CHANGES IN THE USES OF ZAPOTEC DOMESTIC SPACE

Livingston D. Sutro and Theodore E. Downing*

*Livingston D. Sutro is a Research Assistant in the Bureau of Applied Research in Anthropology and Theodore E. Downing is Associate Curator of Social Anthropology at the Arizona State Museum, University of Arizona, Tucson, Arizona, 85721.

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ABSTRACT

Changes in the use of domestic space, the area including a house and its associated yard, are generally considered to be symptomatic of basic sociocultural changes. An investigation was made into the development of 92 such spaces over more than a decade in an Oaxacan peasant-Indian village and it was determined that changes in the use of domestic space indicated specific economic and demographic changes.

THE PROBLEM

Changes in the use of domestic space, the area including a house and its associated yard, are usually considered to be symptomatic of basic sociocultural changes (cf. Glassie 1975; Hillier et al. 1978; and Eighmy 1981). The Diaz Ordaz Project was designed to clarify this relationship by examining specific cases of such changes that occurred during the past 17 years in a peasant-Indian community in the Valley of Oaxaca, Mexico.

THE SETTING

Diaz Ordaz is a nucleated village of Zapotec- and Spanish-speaking peasants-Indians situated 6 km north of the city of Tlacolula (see Figure 1). The inhabitants are mostly poor, folk-Catholic farmers. The village is organized around nuclear family households, with lesser importance being placed on kinship ties through the bilateral extended family and compradrazgo relations. Post-martial residence follows a patri-neolocal pattern, with villagers emphasizing the development of independence among newly weds (Downing 1979). The village also has a strongly developed cargo-system (Ugalde 1973).

Village population has grown at a rate less than that of Mexico and Oaxaca over the past 20 years (Table 1). The village proper shows a slow annual growth rate of only 1.13% per year, a statistic that conceals the high number of outmigrates who have left the town for employment in the state and national wage-laboring market. Increased outside employment opportunities,

migration to the United States, low farm prices, and landlessness (almost 20% of the population own no land), have forced more and more adults to seek wage earning activities outside the community. So common is this pattern in Diaz Ordaz, in specific, and the state of Oaxaca, in general, that Oaxaca's primary contribution to the Mexican national economy appears to be unskilled laborers and household domestics. Such outmigration simultaneously reduces the demand for domestic household space and generates additional supplies of funds for capital improvements.

In Diaz Ordaz the homestead or solar constitutes the basic unit of domestic space. The solar consists of dwelling spaces as well as areas for horticulture, storage, husbandry, hygiene, cottage industry, and all other functions associated with a living household. Much like the American yard, the solar is considered private property usually belonging to a household. Though solares change hands between families through sale from time to time, the average solar symbolizes the family to its residents and many instances can be found of individuals occupying the same tract of land which belonged to their ancestors of many generations back. Given the close relationship between the solar and the household, basic sociocultural changes ought to be reflected in the use of domestic spaces in the village.

METHOD

During the summer of 1980, pertinent data from a sample of

over one hundred plan-maps of Diaz Ordaz solares were reviewed. This information and corresponding demographic data were collected between 1964 and 1967 by students participating in the Stanford Summer Ethnographic Field School.¹ The students were required to draw solar plan-maps (Figures 2 and 3) using a pacing technique and to collect census data. Since different ethnographers collected the baseline data, minor disparities exist in the details of their information, but never enough to preclude usefulness for future research.

Research Design

From this initial review, two questions were selected for investigation:

1) Since the 60s, what changes had occurred in the use of domestic space within the solares? We became especially interested in changes such as new construction, demolition, or solar subdivision brought about by inheritance transfers and reinvestment of outside capital in the household itself.

2) What influenced these changes? We specifically focused on such obvious factors as population growth, changes in household composition, degree of entry into the outside wage-labor market, and how these factors might be used to explain changes in the use of domestic space.

To investigate these questions, from November 1980 to August 1981 Sutro remapped (Figures 2 and 3), censused, and investigated the present condition of the Diaz Ordaz solares which had been previously studied by Stanford field school

students. Information was also collected on solar religious, political, economic, and attitudinal conditions. Using this method, 92 of the original 102 solares were restudied, providing a 14% sample of all village solares.

RESULTS

All cases from the mid-60s sample (1964-1967) were combined to form a single Time I sample for comparison with information collected in 1980-1981 (what will be called the "Time II" sample). Since the samples were not selected randomly, a check was made for representativeness by comparing the population age structure of the Time II sample with that of a complete village census conducted in 1981. Using a two-tailed t-test, no significant differences were detected between the two ($\mu = 27.83$, $\bar{x} = 27.70$, $s = 21.43$, $n = 507$, $df = \infty$, $\alpha = 0.05$).

Demographic and Economic Changes

The sampled area increased in population during the averaged 14.5 year period from 414 individuals to 507 or at a rate of 1.51 % per annum, with the number of married couples increasing from 87 to 103 (a rate of 1.17% per year) over the same period (rates are included for comparative purposes only, as they do not actually reflect the shapes of individual growth curves).

The domestic cycle of the household brought about expectable demographic changes over the 14.5 year period (Table 2). In Time II there were fewer subnuclear and nuclear families and more extended/complex families than in Time I.

Over the past seventeen years, Diaz Ordaz has become increasingly involved in the outside wage-labor market and has a sizable part of its population residing in Oaxaca, Mexico City and other places in Mexico (c.f. Figure 4, 1981 males between ages 25 and 40 as an example) and many more are working as day laborers in the nearby market town of Tlacolula. While only a small proportion (2.6%) of the sampled population were working outside the village in the 1960s, by the time of the restudy, 14.6% of the population was involved in this labor market (an annual rate of increase of 0.83%). In Time I, only 10 individuals of the sampled population (2.4%) were reported to be living outside the community, while in 1981, 53 people (10.45%) were reported living away (an annual rate of increase of 0.55%).

Changes in Use of Domestic Space

As hypothesized above, changes in domestic space use indeed paralleled sociocultural changes.

The descriptive statistics on the physical changes showed that aside from the 101 dwelling units in the original sample, 12 new units had been constructed and 55 units had added new dwelling space, while only 10 of the original units stood unoccupied. Overall, these changes represent an annual rate of increase in dwelling units of 0.8%, a rate not commensurate with the population growth. The rate of solar fragmentation did not keep pace with that of the population increase either, growing only at a rate of 1.04% per annum (see Downing 1973, 1977 for discussions of inheritance patterns and field fragmentation). On

the other hand, the total dwelling area of all the units in the sample increased at a rate of 1.84 % per annum (Time I = 6787 m² vs Time II = 8831 m²).

Moreover, the quality of the dwellings generally improved. Qualitative improvements included construction with more durable, purchased construction materials (such as brick, metal sashes, and concrete) in place of the previously locally produced materials (adobe, log beams, and ceramic roof tiles). Dwelling units with more durable roofs showed the sharpest rise (68.97% per annum), while more durable walls (34.48% per annum) and floors (35.45% per annum) trailed behind. There also was an increased construction of more specialized dwelling structures such as sewing, sleeping and dining rooms. Of these, sleeping rooms showed the most dramatic increase, growing at an annual rate of 14.83%, compared to sewing rooms (10.34% per annum) and dining rooms (with 4 appearing for the first time). More space was also dedicated to storage rooms and sheds (Time I = 1916 m² vs. Time II = 2190 m² for the entire sampled area) than before, although the annual rate of growth was considerably slower (0.925% per annum) than that of dwelling spaces.

New types of structures including a small telephone office, butcheries, and bakeries reflected changes in economic activities, but not changes in the overall village economic structure. Animal husbandry activities also occupied more domestic space, with the appearance of a few huge, market-oriented chicken coops and pigpen structures. More area than

before was devoted to horticultural activities, like flower gardening (with 78 new home gardens appearing where there had original been only 81 or a 6.62% annual increase). Likewise, an increased proportion of the population planted fruit trees (increasing from 18 to 89 orchards or a 27.17% annual increase).

In sum, if any observable modification in the use of domestic space is classified as a physical change, then each solar averaged 9.8 physical changes between the periods of observation. As might be anticipated, some solares changed a great deal, while others did not, the range being from 2 to 44 changes.

Factors Underlying Change in Domestic Space Use

Our analysis indicated that more physical changes, most of them construction, occurred in solares whose households were more articulated with the outside or regional economy (Table 3) and also in those with an increasing population (Table 4).

In addition, the analysis demonstrated that increased use of non-local construction material occurred in solares whose households were more articulated with the external economy (Table 5).

Also, we have observed that not only has there been a diversification in the uses of Zapotec domestic space as a consequence of increased involvement in the external economy, but simultaneously there has been some simplification, too. Because of improved access to modern medical services for the period of parturition, the need no longer exists for the traditional sweat

bath or temescal (of the five extant in Time I, only one remained in 1981, an annual rate of decline of 5.52%). The incidence of small stores had dropped since the mid-60s (only three out of the original seven remaining in 1981, an annual rate of decline also of 3.94%) primarily because of increased transport efficiency and access to non-local vendors. Finally, increased purchasing of subsistence items had decreased the importance of agricultural storage facilities for locally produced food (maize storage facilities dropped from 14 to 10 between Times I and II, an annual rate of decline of 2.00%).

DISCUSSION AND CONCLUSIONS

In 1962, Naroll reported roofed dwelling area to be linearly related to settlement population crossculturally. More recently, Eighmy (1981), working in Northern Mexico, has challenged this perspective by showing that diachronically roofed area may not be particularly sensitive to household composition and size. The findings here tend to support the idea of a relationship between roofed dwelling space and population (Table 6); roofed dwelling area seemed to increase or decrease according to population changes. However, we feel this is only true because of the reduction of pressure on village expansion because of heavy outmigration.

Moreover, in the past, concern has been primarily with rather simple relationships between population and dwelling area. We have improved upon this situation by focusing on the relationship between a population and its domestic space, of

which dwelling area is one component. The study has shown that the rate of change among the different components of domestic space varies within the same time period. It has also shown that these rates indicate not only population changes but also changes in the degree of articulation of a settlement with its regional economy. In Diaz Ordaz over the past 17 years, the increasing involvement of the community in the outside or regional economy has led to increased construction; use of non-local construction materials; and diversification, as well as some simplification, of activity areas.

In sum, the findings of the Diaz Ordaz Project indicate the existence of specific relationships between changes in domestic space use and sociocultural changes.

FOOTNOTE

- 1 Among the field school students were Naomi Quinn, Antonio Ugalde, Merida Blanco, Carol Molony, and Theodore Downing, all of whom are now established social scientists.

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REFERENCES CITED

Direccion General de Estadistica

- 1963 VIII Censo General de Poblacion 1960, 8 de junio,
Resumen General. Secretaria de Industria y Comercio,
Mexico, D. F.
- 1971 IX Censo General de Poblacion, 1970 28 de enero,
Resumen General. Secretaria de Industria y Comercio,
Mexico, D. F.

Downing, Theodore E.

- 1973 Zapotec Inheritance, PhD dissertation, Stanford
University, Ann Arbor, Michigan: University Microfilms.
- 1977 "Partible Inheritance and Field Fragmentation in a
Oaxaca Village," Human Organization 36(3):235-243.
- 1979 "The Social Consequences of Zapotec Inheritance," in
Peace, Poverty, Conflict, and Marriage in the Oaxaca
Valley, edited by Aubrey Williams, pp. 175-193,
Vanderbilt University Anthropology Series, Nashville,
Tennessee.

Eighmy, Jeffrey L.

- 1981 "The Archaeological Significance of Counting Houses:
Ethnoarchaeological Evidence," in Modern Material Culture:
The Archaeology of Us, edited by R. A. Gould and M. B.
Schiffer, pp. 225-233, Academic Press, New York.

Glassie, Henry

1975 Folk Housing in Middle Virginia, University of Tennessee Press, Knoxville.

Hillier, B., A. Leaman, et al.

1978 "Space Syntax". In Social Organization and Settlement, edited by Green, Hasselgrove and Spriggs. BAR International Series, Supp. 47.

Naroll, Raoul

1962 "Floor Area and Settlement Population," American Antiquity, 27 (4):587-589.

Quinn, Naomi

1964 Ethnographic Sketch of Diaz Ordaz. In The Oaxaca Archives, edited by T. E. Downing and M. H. Blanco, Ms. on file, Department of Anthropology, Stanford University, California.

Sutro, Livingston D.

1983 Changing Uses of Zapotec Domestic Space. University Microfilms International, Ann Arbor.

Ugalde, Antonio

1973 "From Hacienda to PRI: Political Leadership in a Zapotec Village." In The Caciques: Oligarchical Politics and the System of Caciquismo in the Luso-Hispanic World, edited by R. Kern. University of New Mexico Press, Albuquerque.

Ugalde, Antonio and Carol Molony

1965 "A Report on Ethnographic Field Training in Diaz Ordaz,

Oaxaca, Mexico". In Oaxaca Archives, edited by M. Blanco
and T. Downing, Department of Anthropology, Stanford
University, California.

Whitecotton, Joseph

1977 The Zapotecs: Princes, Priests and Peasants, University
of Oklahoma Press, Norman.

Figure 1. The Valley of Oaxaca (after Whitcotton
1977:19).

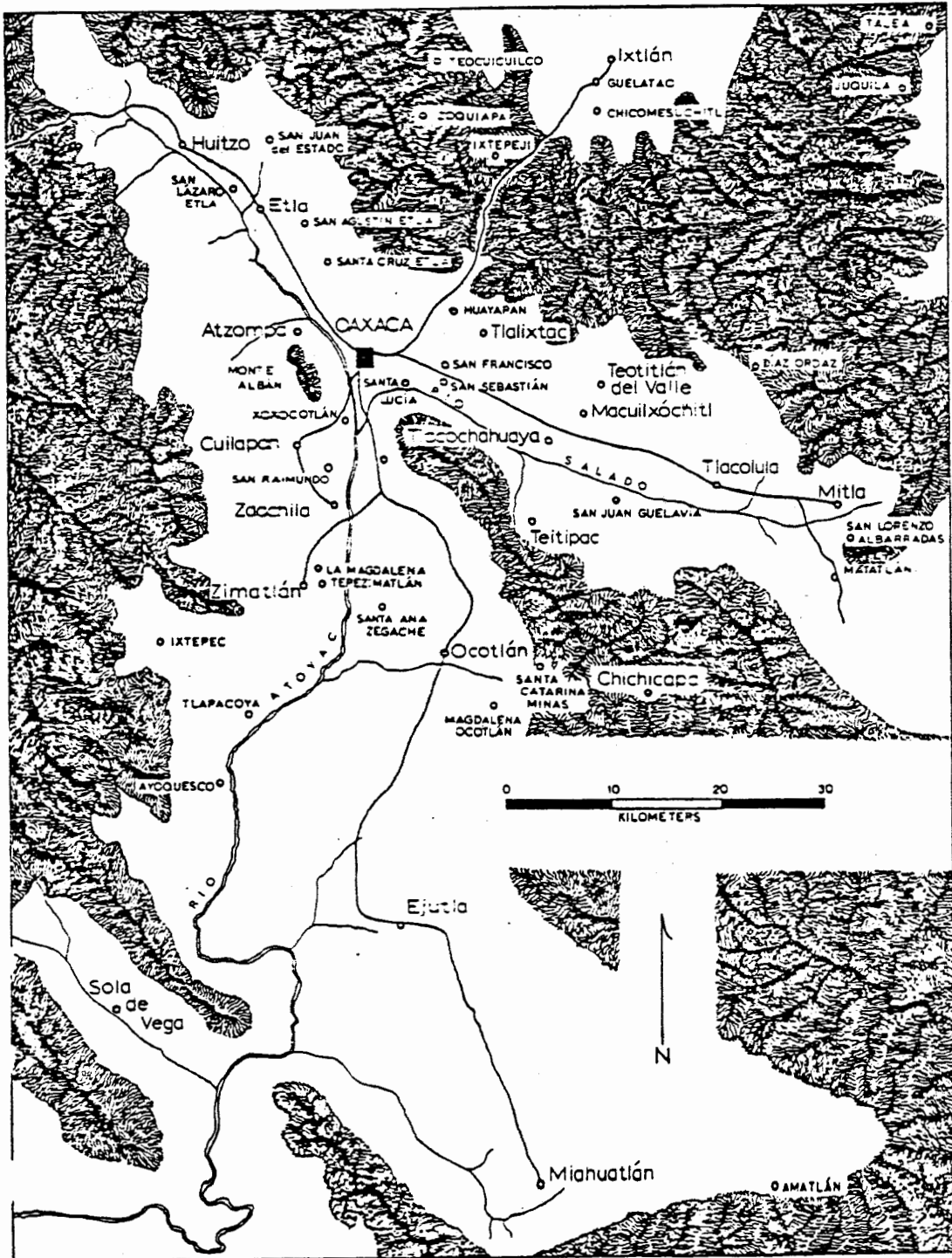
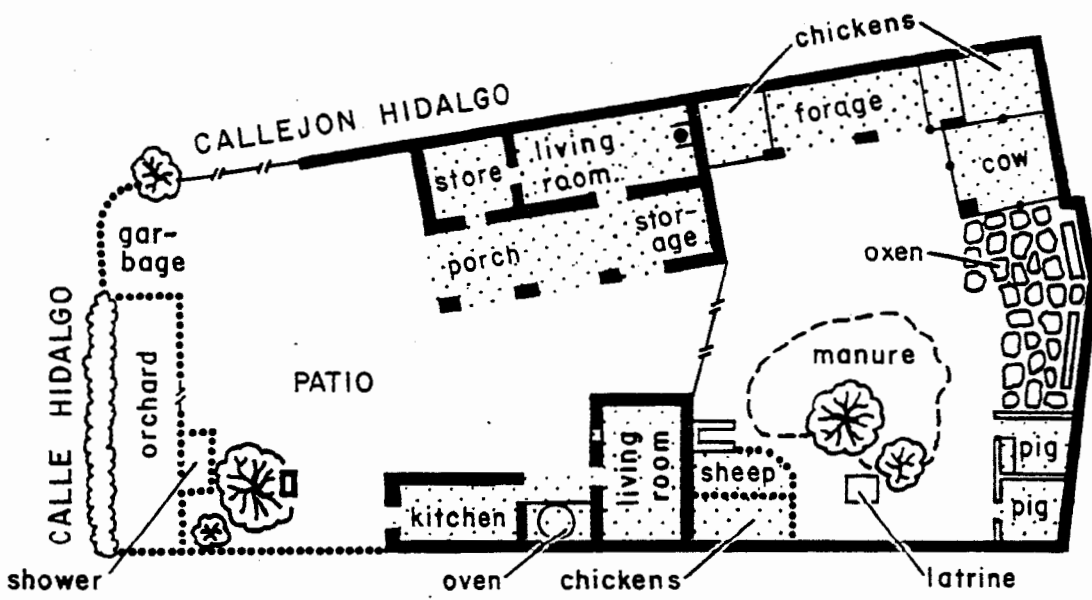
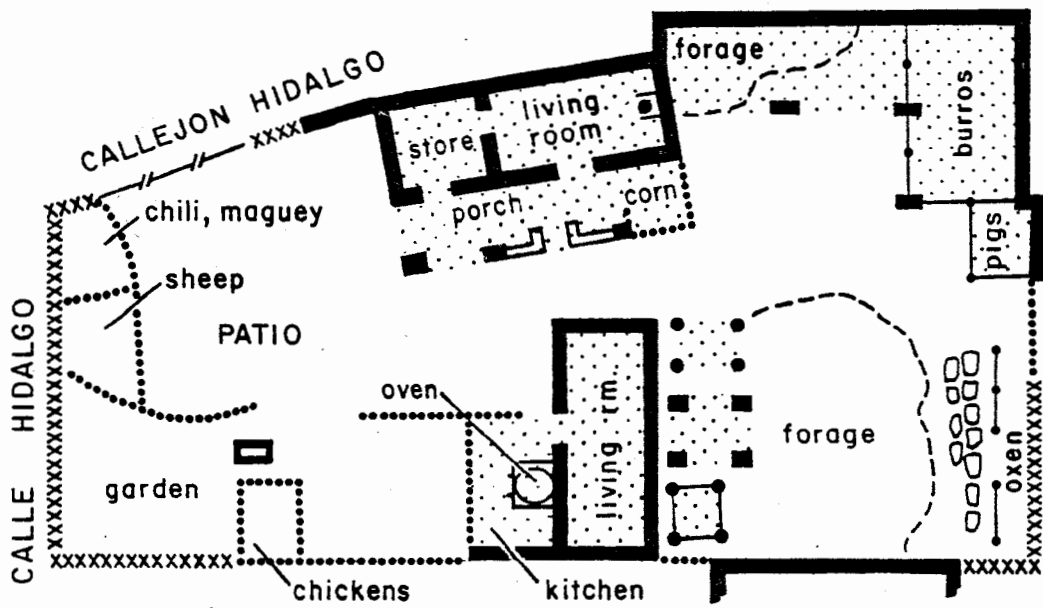


Figure 2. Solar 42-6 in 1964 (after Quinn 1964)
and in 1981 (after Sutro 1983).

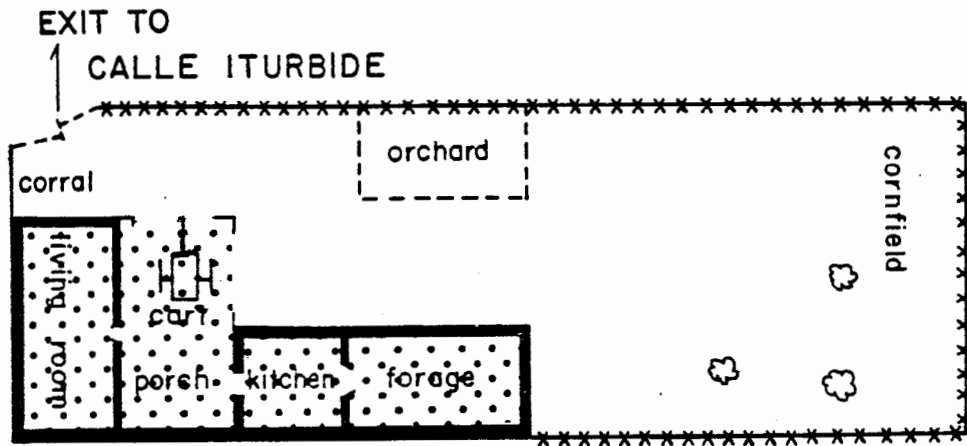


- adobe wall
- xxxxx cactus fence
- cane fence
- pole fence
- /— gate
- ◻ altar
- ◻ wash tub
- ▭ trough
- ◻◻◻◻ stone pavement

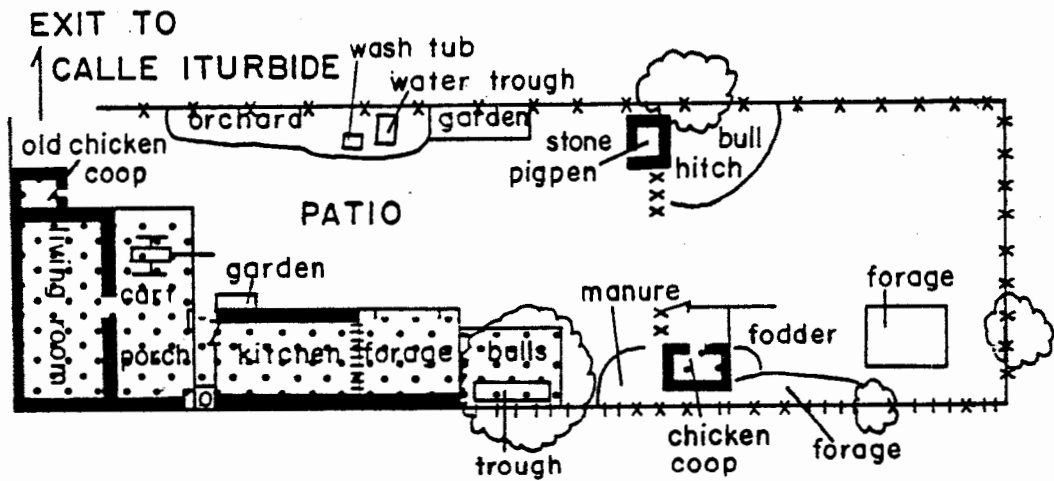


Figure 3. Solar 13-5 in 1965 (after Ugalde and
Molony 1965) and in 1981 (after Sutro
1983).

1965

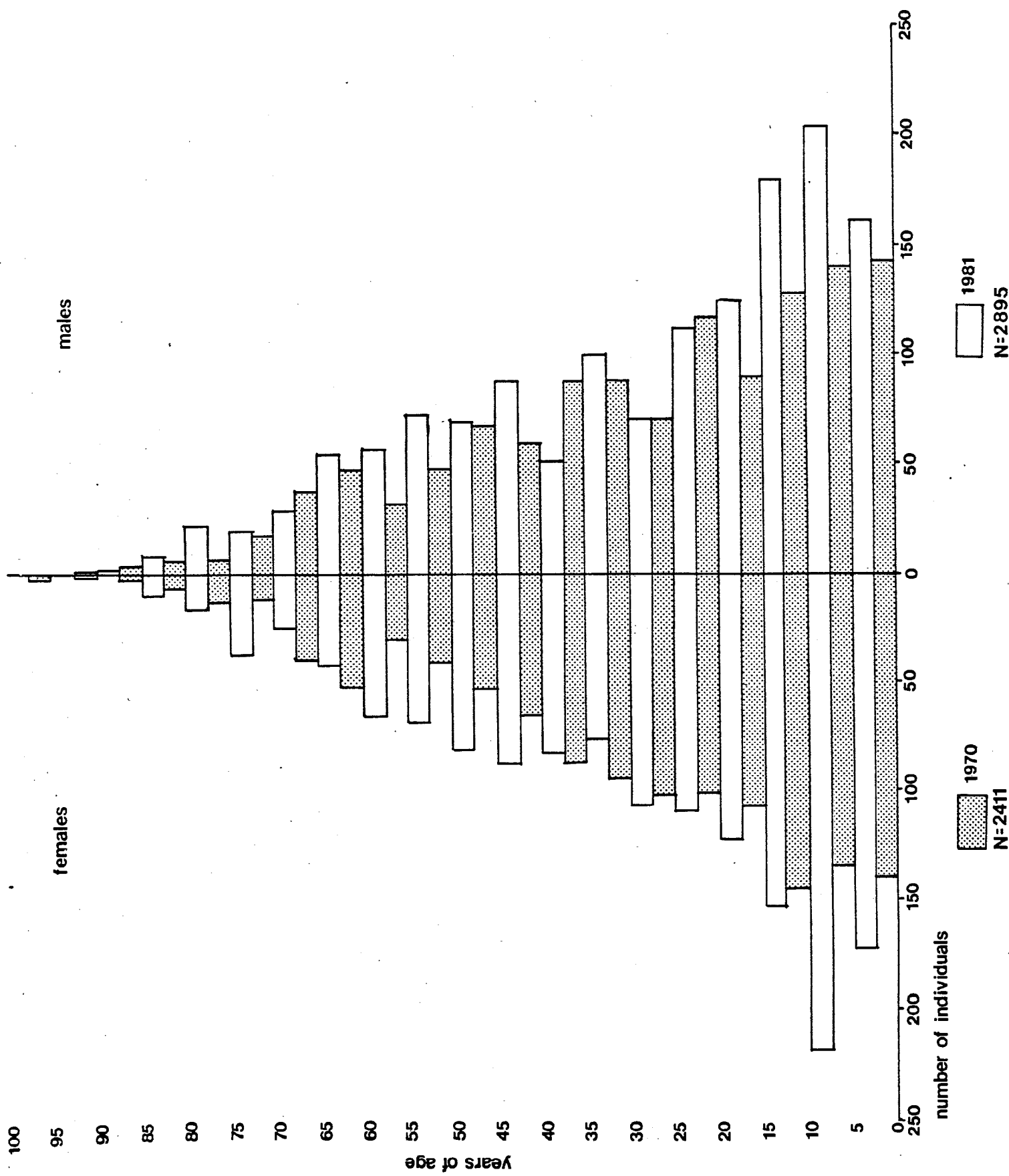


1981



SOLAR 13-5

Figure 4. The village population: 1970 and 1981



100

females

males

years of age

number of individuals

1970
N=2411

1981
N=2895

Table 1. Population Growth in Mexico, Oaxaca, and
Villa Diaz Ordaz from 1960 - 1980¹

	<u>1960</u>	<u>1970</u>	<u>% Change Per Annum</u>	<u>1980</u>	<u>% Change Per Annum</u>
Mexico	34,923,129	48,225,238	3.8%	67,400,000	4.0%
Oaxaca	1,727,266	2,015,424	1.7%	2,518,157	2.5%
Diaz Ordaz	2,488	2,411	-0.5%	2,895	1.8%

¹All figures from Direccion General de Estadisticas 1963 and 1971 except for Oaxaca 1980, courtesy of Lic. Roberto Salas, SSP: Diaz Ordaz 1960 from Quinn 1964 and Diaz Ordaz 1980 from 1981 census data collected by Sutro.

Table 2. Change in Family Type Between Times I & II

Family Type	Time 1	Time 2	Rate of Change per Annum
Sub-nuclear	13	10	-1.59%
Nuclear	44	34	-1.56%
Extended/Complex	35	48	2.56%

Table 3. Relationship Between Involvement in the Regional Economy (Time II) and Physical Changes (from Time I to Time II)

Number of changes per solar

		Average or Below Average	Above Average
^a Solares with Members Working Outside the Village in Oaxaca	none	48	21
	one or more household members	7	7

$$\chi^2 = 7.26, df = 1, N = 83, p < 0.01$$

^aIn the state of Oaxaca, primarily in Oaxaca City

Table 4. Relationship Between Population and Physical Changes

from Time I to Time II

Number of changes per solar

		Average or Below Average	Above Average
Number of Inhabitants per Solar	decreased		
	or stayed the same	38	10
	increased	26	18

$$\chi^2 = 4.37, df = 1, N = 92, p < 0.05$$

Table 5. Relationship Between Involvement in the External Economy and Use of Non-local Construction Materials (Time II)

		Brick or Concrete Floors per <u>solar</u>	
		absent	present
bSolares with Members Working Elsewhere in Mexico outside Oaxaca	none	36	11
	one or more household members	20	16

$\chi^2 = 4.11, df = 1, N = 83, p < 0.05$

b Primarily in Mexico City

Table 6. Change in Population and Dwelling Area from Time I to

Time II

Amount of Dwelling Area per Solar

Number of inhabitants per Solar	Amount of Dwelling Area per <u>Solar</u>		
	decreased	stayed the same	increased
decreased	13	6	16
stayed the same	4	4	5
increased	5	5	34

$$\chi^2 = 12.46, df = 4, N = 92, p < 0.02$$