TRANSFORMATIONS OF SPANISH URBAN LANDSCAPES IN THE AMERICAN SOUTHWEST, 1821-1900

by
Nina V. Brew

B.A. Prescott College, 1975
B.Arch. University of Arizona, 1983

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE MASTER OF SCIENCE IN ARCHITECTURE STUDIES AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June, 1986

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Signature of the Author

Nina V. Brew
Department of Architecture
May 12, 1986

Certified by

Julian Beinart
Professor of Architecture
Thesis Supervisor

Accepted by

Julian Beinart
Chairman
Departmental Committee for Graduate Students

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Submitted to the Department of Architecture on May 12, 1986 in partial fulfillment of the requirements for the Degree of Master of Science in Architecture Studies

ABSTRACT

Through an examination of changes in urban structure and building form, I will consider the continuity of historical Spanish urban form in the American Southwest. The study encompasses three phases of increasing Anglo American influence between 1821 and 1900. An analysis of Santa Fe, Albuquerque, Socorro and Las Vegas, New Mexico, and Tucson, Arizona will be made in reference to: culturally-embedded models of city form in 16th century Spain and 19th century North America; modifications to those models due to a frontier location; and the geographical context of the Southwest. The method of analysis is based on a matrix of transformation processes and hierarchical levels of scale in the environment, and is applied to historic maps, photographs and written descriptions of the five towns. This method identifies elements of form and processes of change that continue to influence the form of these cities and are thus relevant considerations for architectural and urban design interventions in the present.

Thesis Supervisor: Julian Beinart, Professor of Architecture
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INTRODUCTION

This is a study of changing urban form: transformations of place occurring as a result of the collision of two cultures and times. The physical environment that existed in places like Tucson and Santa Fe in 1821 was an expression of the institutions of Spanish imperial colonialism as embodied in the Laws of the Indies, and the limitations imposed by a frontier culturally and economically impoverished by great distance from its center. This environment was changed, slowly at first, but at an accelerating pace, by the westward moving Anglo American frontier. Nineteenth century Anglo American urban form embodied many 18th and 19th century European precedents, but was dictated in large part by easily surveyed and titled rectangular plots within the larger grid established by the 1785 Land Ordinance.

By the turn of the century, Anglo culture and urban form had supplanted Hispanic through a combination of three transformation processes: addition, reconfiguration, and "subtraction"/ demolition. These processes were operable, and are observable at various "levels" of the physical environment, from large scale urban structure to architectural details. In order to analyze the physical changes resulting from cultural change, I have used these levels and transformation processes as a matrix overlaid on the "data", which consist of historic maps, photographs and descriptions of the settlements. For each city and/or time period, the matrix should look somewhat different.

This study encompasses the years from 1821 to 1900, beginning with Mexican Independence and the consequent opening of northern New Spain to trade with the United States: 1821 is also the year that the first Missouri trading expedition arrived in Santa Fe. The first period saw a small influx of Anglo traders, trappers, and then permanent settlers. American military occupation of the region after the Treaty of Guadalupe Hidalgo in 1848 began a second phase of Anglo influence during which more settlers arrived, serving the market created by the military posts. Completion of the railroads in 1880 inaugurated a third period, bringing a model of city form to the Hispanic Southwest very different from the Iberian concept of the late 16th century.
After the turn of the century, a number of events coalesced to hasten and re-direct the transformation process: the automobile began to impose a new set of patterns on the structure of the environment, electricity added a layer to the infrastructure of the towns and significantly changed the visual experience, and both Arizona and New Mexico gained statehood. Additionally, it is significant to this study that 1890 is considered the end of the American frontier period.

The five towns included in this study share the contexts described in Part I—the frontier, a collision of Laws of the Indies and Anglo-American town planning ideals, and geographic location in the Southwest. In the last decade of the century, they also were approximately the same size—Tucson was the largest with a population of 7,531; Albuquerque had 6,238 inhabitants, Las Vegas 6,000; Santa Fe 5,603; and Socorro had a population of 5,000. There are other places, such as the Spanish-founded towns in California and Texas and smaller settlements in Arizona and New Mexico, that could usefully be considered in a study of Hispanic and Anglo settlement forms. However, California and most of Texas fall outside of the region defined as the Southwest, and, while settlements along the international boundary such as El Paso share a common history with other towns on the Spanish frontier, the imposition of the border has deformed the transformation process to the point where it deserves separate examination. Finally, this study has been limited somewhat by available information. The historical data for any of these towns is incomplete, particularly visual records.

Although my intention has been to approach the material as much from the Hispanic understanding of city form as from the Anglo standpoint, lack of records from the Spanish and Mexican periods leads to a certain asymmetry in the analysis. Compared with settlements near the center of the colonial empire, records for towns on the northern frontier are incomplete. The lack of strong central administration during the Mexican period coupled with almost complete illiteracy on the frontier meant that few records of settlement foundation and growth were kept. The valuable descriptions of early Anglo travellers like Susan Magoffin, Zebulon Pike and Josiah Gregg have few counterparts in Spanish Borderlands literature.
Two related concepts are basic to this thesis: continuity and transformation. In general, continuity of form in the physical environment is a condition of overlap, either temporal or spatial, and its meaning therefore implies at least two states or forms: it implies change. To consider change in the physical environment as transformation is to understand a new form in terms of its previous state. Underlying this study is the position that continuity in the built environment has positive value. Given this attitude, architecture is understood as intervention, as part of a continuous transformation process; with the important role of reinforcing the structure and form of the context through physical continuity, in addition to adding new value through design. Considering architecture in terms of continuity and transformation has implications for the value of "history" to design: the past is relevant insofar as it is embodied in the physical form of the present; or, put in a slightly different way, in Kevin Lynch's terms, it is the "present value" of a historic environment that is important. (p. 36)

My general concern in this study is to identify patterns of continuity and discontinuity in the transformation of Southwestern city form. One way of approaching this is to consider it as the tension between continuity of culture and continuity of place in the frontier environment. Normally these two phenomena are coincident - in 16th century Sevilla or Madrid, for example, there was continuity of culture and place; in the New World, attempts to impose Iberian culture necessarily resulted in discontinuity of place - changes in the physical environment inconsistent with the existing structure and form.

To consider this issue, I have devised a framework for analysis that recognizes evidence of continuity in the built environment. At one level, the pace of change or its magnitude might be considered as conditions constituting continuity or discontinuity. The pace of change in the Southwest accelerated from 1850 onward, and, following 250 years (between the Onate Expedition and arrival of the railroad) of relatively slow change in the physical environment, transformations from 1880 onward are revolutionary by comparison. However, a rapid rate of physical change alone does not necessarily result in discontinuity. Magnitude considered as an absolute does not answer the question either - application of Victorian "gingerbread" to an adobe house may disrupt the visual continuity of a street as much as a new skyscraper
changes the skyline. A more meaningful way to analyze transformation is to consider the physical environment as a hierarchy of size "levels", and to evaluate continuity at each level. In general, to be continuous, change must virtually follow formal rules of the existing context at the level in which it is intervening. A more complete explanation of this position is set forth at the beginning of Part II.

This study is a beginning: a step in the direction of understanding the collective urban history of the Southwest in terms of its physical forms. While there are a number of monographs on individual cities and towns, and some discussion of the influence of the Laws of the Indies in North America, few works address the common Hispanic heritage as it has influenced the urban form of the Southwest. There is also an absence of work that deals directly with the elements of physical form of these cities, particularly though any visual or graphic media. There are, therefore, two currents running throughout the thesis, one dealing with the continuity of place in the Southwest, the other with a general understanding of the processes of transformation of form. The structure for these two lines of thought has two parts: the first describes three parameters that together form a context or reference for transformations that are then described and analyzed for each town in the second part. The final section contains generalizations about the collective transformation process and its meaning in the present.
Part I - CONTEXTS OF CHANGE
Figure 1. Regional Map
The concept of "the Southwest" is an ethnocentric one, based on Anglo-American perceptions of political and cultural geography. Although the name itself is derived from its position relative to the United States' political boundaries, the concept is presently associated with a collage of images of the desert, Native American and Hispanic cultural expression, and the Frontier West. That most of these associations are historical is not incidental to the purpose of this study. A more precise definition of the Southwest involves a number of factors linked to these images.

The CULTURAL area is defined by the overlapping territories of three groups of people: American Indians, Hispano-Americans (historically, Spaniards and Mexicans), and Anglo-Americans. While patterns of political and cultural hegemony have been sequential in nature, settlement has been cumulative, influencing the patterns of urban form and structure.

The PHYSIOGRAPHIC region is primarily desert and high desert, encompassing two distinct areas, the Colorado Plateau in the northeast, and the Basin and Range Province in the southwest. These sub-regions are held together by the surrounding "difficult terrain" - the Llano Estacado to the east, the canyon lands and mountains to the north, and the Mohave-Sonoran desert to the Southwest. (Meinig, p. 6)

The POLITICAL definition roughly corresponds to the state lines of Arizona and New Mexico, although portions of western Texas and southern Colorado are included. The present international boundary between the United States and Mexico is inconsistent with the geographical boundaries, but defines "the Southwest" in contrast to other regional terms such as "Spanish Borderlands" or "La Gran Chichimeca" (a culturally-defined region lying mostly in Mexico and including the Southwest). These different terms are indicative of the history of shifting political boundaries and the sequence of frontiers.

The region is most consistently defined by CLIMATE: almost all of the Southwest is classified as either arid or semi-arid, with a small section of
extremely arid territory along the western part of the border with Mexico, and a narrow sub-humid stretch along the Mogollon Rim in central Arizona.

Because the territories of "aridity" and "the Southwest" are so coincident, the influence of climate on the urban landscape warrants some further discussion. On one level, climate has often been considered as a determinant of architectural and urban form, as form attempts to ameliorate the harshness of the environment, and in fact there may be a connection between the Laws of the Indies' genesis in the resettlement of arid Extremadura during the Reconquista and its successful implementation in the Southwest. However, I think a more fruitful association can be made at the level of settlement patterns and landscape.

Historically, there are two types of spatial relationships in arid lands: the oasis settlement (creation of an essentially "humid" environment in, but not of, the desert), and dispersed settlement in both nomadic and fixed, or sedentary, patterns. Both of these are functions of the availability of water—a permanent source of groundwater in the first case, and a predictable, if sparse, distribution of rainfall in the second. There is a potential for conflict between two kinds of settlement groups occupying the same area, as the sedentary people live within the domain of the nomads, an unstable territorial situation which is aggravated by conflicting economic interests: oasis settlements generally have long-term interests in the use and conservation of resources, in contrast to shorter term interests of the pastoralists. (Clawson, p. 429)

At the time of arrival of the Spaniards, Indians inhabited the region in both patterns: the Navajo, Apache and Papago tribes were nomadic or semi-nomadic; and the Pueblo and Pima groups were essentially sedentary, living in oasis type settlements. The Spanish policy, based on the experience of the 15th century Reconquista, was one of oasis settlement; establishing missions, presidios, and civilian "pueblos" within in the Apache domain which were subjected to raids and general harassment. The Anglos settled in both patterns—they used the established towns of the Spanish and Mexican periods in addition to a dispersed agricultural pattern of sheep herding, cattle grazing, and subsistence farming.
Aridity has also been linked to social and political structure, which in turn is reflected in urban patterns. Institutions tied to water use have had a direct influence on land use and settlement patterns in the region — irrigation, for instance, is necessarily a communal activity, and in the United States, organization and administration of water districts is specific to the arid West. In the Spanish period, the location and construction of the acequia madre (the main irrigation ditch) was one of the first acts in the founding of towns in New Mexico, and citizens were expected to contribute voluntary labor to maintain all of the acequias in their town. Tendencies toward collective organization are generally offset by the dispersal required by the environment; more than one author has noted the social costs of distance in the West, and aridity has been attributed with producing "scattered, specialized, and exploitative frontiers". (Mann, p. 405)

A large part of the general description in the last few paragraphs pertains to subsistence economies, which were characteristic of Indian and Hispanic settlements. In the Anglo period, completion of railroad connections between the Southwest and other parts of the country, and the subsequent influx of capital, materials and technology permitted the region to overcome many of the limitations imposed by scarcity of water, although not without serious cost. This link to the resources of the industrialized East is critical: "...the arid west would have developed in a very different manner had it not been an inseparable segment of a large, rich nation". (Hodge, p. 10)

In considering the impact of the 1785 Land Ordinance, which imposed a mile square grid of sections and townships across the western two thirds of the country, on settlement patterns, it is of interest that John Wesley Powell, after an extensive expedition into the Southwest, issued a report recommending against such a pattern of land subdivision in the arid lands. He recognized that agricultural settlement would be dependent on proximity to a reliable surface source of water, the locations of which had no relationship to the survey. Further, Powell thought that the standard homestead would have to be enlarged to support a sufficient number of livestock. (Powell, 1962)

Aridity is linked to the concept of frontier in a very fundamental way — arid environments are, by definition, marginal for human habitation, and within a
political region where more supportive environments exist, arid lands are likely to be frontiers.

TWO GRIDS: THE LAWS OF THE INDIES AND 19TH CENTURY ANGLO AMERICAN PLANNING

The physical form of both Spanish and Anglo American towns was structured by the rational order of the grid plan. In colonial settlement, use of a grid plan as a means of maintaining control over great distances and creating a recognizable place in foreign lands has a long history, including Roman colonization of the Iberian peninsula from 200 B.C. onward. There was ample precedent in Spain for a systematic approach to town planning: during the Christian reconquest of the peninsula up to 1490, a series of relatively autonomous city-states served to occupy and organize territory regained from the Moors. Urban historians have cited these cities as possible precedents for the Laws of the Indies. (Reps, 1979; Violich) The rational order of the Laws of the Indies town no doubt owes something as well to Renaissance ideas of planning, which in turn go back to Vitruvian principles.

The Laws of the Indies was a document developed and used by the Spanish Crown to direct colonization of the New World. In addition to addressing matters of administrational organization, the Laws contained complete instructions for the siting, laying-out and building of new towns, which were implemented either partially or fully in hundreds of settlements founded in New Spain over three centuries. The first "instructions" from King Ferdinand were written in 1501; they were subsequently revised by experience in the New World until 1573, when King Philip II issued "The Royal Ordinances for the Laying Out of Towns". In 1681, the "Recopilacion de leyes de los reynos de las Indias", a codification of all existing Spanish law regarding the New World was published; this is the document known as the "Laws of the Indies". There were other revisions and additions to this document; of specific importance to the northern frontier are the "Instructions for the Establishment of the New Villa of Pitic in the Province of Sonora", issued in 1789 and intended for use in new settlements throughout the northern provinces. (Jones, p. 10)
The Laws of the Indies applied to civil settlements – "pueblos", and there were other regulations for the establishment of military presidios and religious missiones. In New Mexico, where the indigenous towns were early referred to as pueblos, the standard terminology was adjusted to avoid confusion, and the types of towns, in descending order of size and importance were called ciudades, villas, poblaciones, and plazas.

There were 148 ordinances in the Laws of the Indies; the first 100 or so deal with selection of a site for a new town, including consideration of health matters; financial and legal considerations, and relationship of the new town to indigenous towns and populations. The requirements for selecting a site for the town are summarized in ordinance 111:

"Having made the selection of the site where the town is to be built, it must, as already stated, be in an elevated and healthy location; (be) with means of fortification; (have) fertile soil and plenty of land for farming and pasturage, have fuel, timber, and resources; (have) fresh water, a native population, ease of transport, access and exit; (and be) open to the north wind..."

Ordinances 112 through 117 describe the structure of the town:

112. "The main plaza is to be the starting point for the town; if the town is situated on the sea coast it should be placed at the landing place of the port, but inland it should be placed at the center of the town. The plaza should be square or rectangular, in which case it should have at least one and one half its width for length inasmuch as this shape is best for fiestas in which horses are used and for any other fiestas that should be held.

113. "The size of the plaza shall be proportioned to the number of inhabitants, taking into consideration that fact that in Indian towns, inasmuch as they are new, the intention is that they will increase, and thus the plaza should be decided upon taking into consideration the growth the town may experience. (The plaza) shall not be less than two hundred feet wide and three hundred feet long, nor larger than eight hundred feet long and five hundred and thirty two feet wide. A good proportion is six hundred feet long and four hundred feet wide.

114. "From the plaza shall begin four principal streets: One (shall be) from the middle of each side, and two streets from each corner of the plaza; the four corners of the plaza shall face the four principal winds, because in this manner, the streets running from the plaza will not be exposed to the four principal winds, which would cause much inconvenience."
115. "Around the plaza as well as along the four principal streets which begin there, there shall be portals, for these are of considerable convenience to the merchants who generally gather there; the eight streets running from the plaza at the four corners shall open on the plaza without encountering these porticoes, which shall be kept back in order that there may be sidewalks even with the streets and plaza.

116. "In cold places the streets shall be wide, and in hot places places narrow; but for purposes of defense in areas where there are horses, it would be better if they are wide.

117. "The streets shall run from the main plaza in such manner that even if the town increases considerably in size, it will not result in some some inconvenience that will make ugly what needed to be rebuilt, or endanger its defense or comfort."

The locations of the principal church, the public buildings – the cabildo (council), custom house, arsenal, and the royal houses are assigned in subsequent ordinances. Ordinance 124 describes the relationships between the plaza, the main church and other important buildings in the town:

"The temple at inland places shall not be placed on the square but at a distance and shall be separated from any other nearby building, or from adjoining buildings, and ought to be seen from all sides so that it can be decorated better, thus acquiring more authority; efforts should be made that it be somewhat raised from ground level in order that it be approached by steps, and near it, next to the main plaza, the royal council and cabildo and customs houses shall be built. (These shall be built) in a manner that would not embarass the temple but add to its prestige..." (Crouch, et.al., pp. 14, 15)

The remaining ordinances describe the division of house lots (solares) and farming lots (suertes) among the settlers, and location of the hospital for contagious diseases, cemetery, and slaughter houses and tanneries away from the center of town.

The actual ritual of founding a town included gathering all of the settlers on the site of the plaza, at the center of the grant, and marking off the surrounding streets and lots, including those for the church and priest's house, soldiers' quarters, and casas reales. The settlers would also accompany the governor and the surveyor in marking the boundaries of the grant and common and private lands within it. Finally, "in accordance with ancient Spanish custom, they would have pulled up grass, thrown rocks in the air, and shouted 'Long Live the King!'", all symbolic acts of taking possession. (Simmons, p. 88)
In an essay that deals with American town planning in reference to frontiers, it seems necessary still to include a disclaimer to Frederick Jackson Turner's theory that the western urban frontier was an afterthought—that towns grew up only at the end of a succession of exploration, mining, ranching and farming developments. In fact, as John Reps unequivocally points out, cities beyond the 95th parallel were planned: "They were established as planned communities from the beginning, with designs that provided a framework for future growth". (1979, p. 3) That framework was a simple, orthogonal grid, a feature they shared with Laws of the Indies towns. In general, structural transformations of the southwestern towns can be considered as the juxtaposition in time and place of these two grids.

There are several distinctions which characterize the Anglo American grid. While the initial plan for a frontier town may have been the action of a single decision-maker, most western towns are aggregates of separately controlled and sequentially platted "subdivisions", the physical result of which is often different street and block sizes and orientations.

The larger reference for these individual decisions was provided by the township and section lines laid over the western two thirds of the country beginning with the 1785 Land Ordinance. Originally implemented in a small portion of the Northwest Territory, the survey was soon extended to cover virtually all new lands in the United States. Based on a system of alternating townships of 36 mile square sections, the Ordinance set aside certain sections of each township for the federal government and support of public schools, leaving the majority for sale to private citizens.

Reps has this to say about the relationship of this infrastructure to the process of town planning:

"This great grid imposed on the continental landscape was to have a significant influence on the planning of towns. As entire townships and mile-square sections were further subdivided by their original owners, smaller, regular tracts were created. When these were acquired by town promoters it seemed natural for them to lay out streets parallel to their borders. Often these tracts lay at section or township boundaries along which the earliest rural roads were usually located. Here one might find a small cluster of houses forming a hamlet or village. As the settlement grew, additional streets
were surveyed parallel to the first to form expanding gridiron towns." (1979, p. 10)

A second, related characteristic is the speculative nature of American town development. New towns were surveyed and platted for profit by private investors. One physical result of this was the practice of landowners to sell separated parcels of land, thereby increasing the value of uncultivated land inbetween in the long run. (Reps, 1979, p. 11) Another was the shape of blocks and lots - the desire to maximize the number of frontages along important streets led to narrow, deep lots (25 x 150 ft. was common). In turn, the most profitable layout meant that the streets given importance were parallel to one another, and those perpendicular became secondary, or "side" streets. This directional and differentiated quality is quite different from the center-generated differentiation of the Laws of the Indies.

A well-known aspect of this speculative form of planning is that it encourages changes in land ownership, a fact which contributed to an overall dynamism on the Anglo frontier that had no counterpart in previous Mexican and Spanish frontiers. According to Reps, "Mobility, both social and physical, characterized the Anglo American urban frontier. Unsuccessful towns could be and often were discarded like a threadbare suit of clothes". (1979, p. 33)

THREE FRONTIERS: SPANISH, MEXICAN AND AMERICAN

The term "frontier" is essentially spatial and territorial in character, although it has a temporal quality as well because it is associated with movement. A frontier is an edge, an outer limit; this implies a center, or source. It usually connotes expansion. In contrast to "boundary" which is a relatively recent term connected to the rise of nation-states in Europe, "frontier" is as old as the coexistence of different cultures. While a boundary is a formally-demarked line of political authority, a frontier is the edge of a zone of influence.

Frontiers have been conceptualized in a number of different ways. An anthropologist's frontier is a cultural edge, and is a part of a body of theory that deals more with the frontier as it relates to the geographical center or "focus" from which the culture spreads.
Another conceptual organization concentrates on the frontier zone itself, and only secondarily on the relative strength of ties to its center. Certain types of ties, such as military, tend to be stronger than others, among them, economic. One theory holds that adjacent frontier zones tend to be more like each other than like their respective centers:

"Where the influences from culture climaxes or foci meet in equal strength is where a line must be drawn, if boundaries are to be indicated at all. Yet it is here that differences are often slight...It is probable that they have more traits in common with each other than with (their) focal points... This is almost certain to be so where distance from the foci is great and the boundary is not accentuated by any strong physical barrier or abrupt natural changes." (Kroeber, in Kutsche, 1983, p. 17)

While the delineation of a frontier is usually geographical and can be represented by a line on a map, the term is also applied to phenomena that are not so readily translated into a linear pattern. Hennessey found it useful to consider the different types of frontiers in Latin American history individually - mission, Indian, mining, cattle, agriculture, Anglo-Hispanic, and political frontiers. It is interesting to note that his sequence of organization generally follows that of Frederick Jackson Turner, whose idea of "frontier succession" has been widely criticized, particularly by urban historians, who argue that the urban frontier was at the forefront of western expansion in the United States, and certainly in colonial settlement in Latin America.

Turner was also the first to propose that frontiers have special, characteristic properties. His famous 1893 paper (delivered at the World's Columbian Exposition), which declared the closing of the American frontier, presented the view that frontiers tend to produce people who 1) act independently of cultural and governmental centers, 2) tend toward equality, and 3) minimize "cultural baggage" to only what is necessary. Historians of the northern Hispanic frontier have observed these traits during both the Spanish and Mexican periods. (Weber, Jones)

In his bibliographic article, "Borders and Frontiers", anthropologist Paul Kutsche proposes a framework for frontier studies based on "logical possibilities of contact" with reference to power. The five possibilities he considers are: human societies confronting non-human environments; gross inequality of power; creation of a resistant culture through transfer of
weaponry or technology from the expanding culture; imposition of a superior power on a complex stable society; and a meeting of equals. (1983, p. 18)

The original Spanish colonial frontier can be described by a combination of the third and fourth categories — the indigenous tribes along the Rio Grande did have a highly-developed culture that in fact became quite resistant after acquiring Spanish horses and weapons. Their resistance, most strongly registered in the Pueblo Revolt of 1680 in which the entire Spanish population was either murdered or driven out of the upper Rio Grande valley to El Paso del Norte, and that of the nomadic Apache and semi-nomadic Navajo, continued into the middle of the 19th century, supressing agricultural growth outside of the main settlements.

With respect to the Southwest, or more properly, La Gran Chichimeca, Kutsche remarks on the historical continuity of this frontier zone, calling it "a constant frontier of changing centers". (1983, p. 17) The region was a "fringe" in pre-Columbian times, with the focus in the Valley of Mexico. The subsequent center was Sevilla where the Council of the Indies collected reports of activity in the New World and issued instructions for expansion of the colonial empire. The political center after Mexican Independence shifted back to the region around Mexico City, but cultural influence continued to be based in Europe; and in the period of American expansion it was the Eastern half of that country. (Since then, there has been a complex play of influences on this region that continues to be an "edge" — while the East Coast has retained its dominance as a cultural center, the West Coast and Mexico have had strong influences; California because of its proximity, and Mexico because of large numbers of immigrants and migratory workers.

In general, there are three attributes of "frontier" which are useful in considering the built form of southwestern cities and towns. Two of these are associated with the quality of EDGE: its relationship to the CENTER, and its relationship to an adjacent frontier EDGE. The third derives from the quality of expansion, or MOVEMENT.

![Diagram]

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In writing about the Spanish and Mexican periods of Tucson’s history, Sonnichsen uses the word "outpost", which has quite a different connotation from "frontier" with regard to movement, and brings up a major difference between the Hispanic and Anglo American frontiers: there was constant movement through American frontier towns – of people, merchandise and capital; in the abstract, of "culture". By contrast, there was little movement through, or of, Spanish and Mexican frontiers; the northernmost point of the Spanish urban frontier in the Southwest, Santa Fe, was established very early in the colonial period (1609), and the settlements formed a static edge that consequently had less cultural contact with the "center".

Given these qualities of frontiers in general, the nature of the "far northern frontier of New Spain" can be characterized in the following way: extreme distance and isolation from center, little or no movement, and conflict with the other cultural edge. The strength of Spanish frontier institutions, particularly the Mission, was something of a counterbalance to these difficulties.

In his study of civilian settlements of the Spanish colonial period, Oakah L. Jones provides the following assessment of urban development:

"In general, most people lived in frontier communities, many of them small hamlets or villages. Spanish towns and their jurisdictions had certain established limits, within which were the residential districts, areas reserved for government and ecclesiastical buildings, agricultural lands allotted to individuals, and common properties, which included royal as well as grazing lands owned by the community as a whole. People were not dispersed over the countryside; some were in small communities and on rural properties, but within the limits of jurisdiction assigned to a major center of settlement. This was true in New Mexico both in the region between Taos and Socorro and in the vicinity of El Paso del Norte. Neither did towns develop from the clustering together of rurally oriented frontiersmen. Communities were established first; settlers subsequently spread into the surrounding area. Yet they always remained dependent upon that community, of which they were considered a part. What developed, then, was a settlement pattern that stressed both urban life and rural work. The jurisdiction of any particular community might include subordinate communities of many kinds, including nearby haciendas, ranchos, and settlements for pacified, Christianized Indians as well." (Jones, p. 241)

The northern Mexican frontier, (1821 – 1848) was characterized by weakened frontier institutions, continued conflict with indigenous peoples, and confrontation
with a new frontier: American westward expansion. The Mexican frontier retreated in some areas (Alta California, Arizona, Sonora) and expanded in others, notably New Mexico: the founding of Las Vegas in 1833 is one example.

David Weber's work on the northern Mexican frontier offers the conclusion that the period between 1821 and 1848 "saw only the beginnings of the transformation of some frontier communities from agrarian villages to urban centers..." (p. 229) This process occurred at different times and rates throughout the Spanish Borderlands. Within the region I have defined as the Southwest, Albuquerque "enjoyed a well-developed urban economy as early as 1790, when handicraft production apparently occupied nearly fifty percent of its male workforce". (Weber, p. 226) Due in large part to its location on the extension of the Santa Fe Trail in Chihuahua, Albuquerque's development as an "urban center" continued between 1821 and 1848. In the same period, Tucson and other settlements along the Santa Cruz and San Pedro rivers lost population as constant attacks by Apache Indians succeeded in pushing back the frontier. Socorro, located inconveniently across the Rio Grande from the Camino Real, also suffered from exposure to Indian attack. Santa Fe was the focal point of commerce during this period, in addition to retaining its status as provincial capital; hence its growth, and exposure to Anglo culture, was perhaps the greatest of any of the Southwestern towns. Las Vegas is the result of the Mexican government's policy of expansion that encouraged new towns under a set of laws evolved from the Laws of the Indies.

Weber also describes social change during this period as moving from a more "egalitarian" society (a characteristic ascribed to frontiers in general by Turner and others, and documented by Jones on the Spanish frontier), to one in which classes were polarized by the system of debt peonage into a few wealthy families who controlled trade and agriculture, and a majority of exploited poor. Anglo visitors were cognizant of this socio-economic structure; William Becknell wrote that New Mexico society was characterized by "the rich keeping the poor in dependence and subjugation". (Weber, p. 210)
The early trading expeditions which were the vanguard of the Anglo-American frontier, had their strongest impact on New Mexico. Anglo trappers and traders had some dealings with communities in Arizona, but no permanent settlement occurred there until the 1840's.

The its movement, a drive to connect the east and west coasts fueled by national political policy and by the potential for economic gain. Between 1848 and 1890, the rate of Anglo settlement in the Hispanic Southwest rose dramatically; one culture gaining hegemony over the other by sheer force of population, if not resources. This population growth allowed urbanization of the Southwest.

In actuality, then, there are two parallel processes at work during the period covered by this essay: that progression from agrarian, subsistence economy to an economy based on commerce that accompanies the transformation from "rural" to "urban"; and the cultural change which, as it was expressed in transformation of the physical environment, is the focus of this study.

CHIHUAHUA

As a summation of these ideas on the contexts for transformations occurring after 1821, and as a point of departure for descriptions of the southwestern cities that follow in Part II, I am including here a historic description of Ciudad Chihuahua. Chihuahua was the originating point of the colonial Camino Real to El Paso del Norte and Santa Fe; it also became the terminus of the Santa Fe Trail during the Mexican period. Chihuahua is 250 miles from El Paso del Norte; 580 from Santa Fe, and 1350 from Independence. From Santa Fe, it took wagon trains 40 days to reach Chihuahua, and 15 days for post riders. The city is the northernmost embodiment of the urban ideal of the Laws of the Indies, and thus serves as a model of intention in considering Spanish colonial towns on the northern frontier. The description comes from Lt. Zebulon Montgomery Pike's expeditions in the area in 1807 and 1831.
Chihuahua was founded as a mission in 1697, and by 1705 had a civilian population. In 1807, the population was 7000, and Pike described "...a town built around an oblong square containing the principal church, the royal treasury, the municipal office, and the richest mercantile stores. At the southern end of the town was another small but elegant church, and at the western end a military chapel, the barracks, the military academy, a Franciscan convent, and a superb hospital..." (Moorhead, pp. 40-41)

The following description is from the 1831 expedition:

"The twin spires of Chihuahua's cathedral first came into view from ten miles out, and later the picturesque setting of the city itself, situated among the cottonwoods lining the banks of the Rio Chaviscar and almost completely surrounded by detached brown mountain peaks. The road from the north swung around a spur of the mountains and entered the city from the east, passing several large haciendas deeply buried in luxuriant trees. The immediate approach along the little river was more unpleasant, however, for the mean houses of the suburbs alternated with ugly piles of scoria and dross, the refuse of Chihuahua's smelters.

"The city proper had a population of 12,000 to 15,000 and was more regularly laid out than Santa Fe; its straight streets running at right angles in the cardinal directions. In the center of the spacious main plaza was an imposing fountain and around it paved walks and streets. Facing the square were the principal public buildings: the ornate cathedral on the south, the mint and treasury on the west, the legislature's hall and public granary on the north, and the governor's palace on the east. A short distance to the west of the plaza was the unfinished church of San Francisco and the old Jesuit hospital, now converted into a military establishment with the chapel, academy, and barracks. On the south side of town was the beautiful Alameda, a public walk almost completely shaded by rows of cottonwoods, and at the end of it the Plaza de Toros, or bull ring, which traders sometimes used as a wagon yard. In a lesser plaza was a monument to the heroes of Mexico's Independence who had been imprisoned and shot at at Chihuahua in 1811. The city was well watered by the Rio Chiviscar on the north side and by an imposing stone aqueduct on the south.

"The houses of the city were mainly of one story, but many were handsome and well built of stone and whitewashed adobe. Conforming to the traditional Spanish pattern, the rooms of each were built with high ceilings around a patio and with thick walls having few windows, all of which provided a cool interior." (Moorhead, p. 117)
The general attributes of frontiers, and the specific characteristics of Hispanic and Anglo frontiers have physical expression in the environment, and are related to the processes of transformation occurring in southwestern towns in the 19th century. The next part of the thesis begins with the description of a conceptual framework used to analyze these transformations at various levels of the physical environment; this is followed by an analysis of change in Santa Fe, Albuquerque, Las Vegas, Socorro and Tucson.
Figure 2. Ciudad Chihuahua, mid-19th century
Denver Public Library, Western Collection
Part II - TRANSFORMATIONS
FORM AND STRUCTURE: A FRAMEWORK FOR ANALYSIS

In order to shape the following analysis and make it useful for thinking about current architectural and urban design, I have developed a simple matrix of transformations, considering elementary, component processes of change with respect to size, or scale levels of the physical environment.

Barring natural disaster, transformation of the built environment occurs primarily by human action, except for the process of decay/ruin, which happens entropically, by lack of attention needed to maintain stasis. These actions can be grouped into three very general and inclusive categories based on disposition of building materials: addition, where new material is used in transforming an existing environment; reconfiguration, where change in form occurs without change in the quantity of materials; and subtraction/demolition, where materials are removed from the site.

While these categories are inclusive enough to provide a clear order for analysis, they are also reductive enough to be of limited descriptive value—consequently, I will also use some other terms that are either sub-categories or combinations of these three. One is infill, which is addition of materials at one level, but also means that the form of the next higher level is unchanged. Another is extension, the addition of materials beyond the boundaries or edge of the present form, occurring at the same level. Finally there is replacement, which is the result of combined demolition and addition.

This framework owes a certain amount to John Habraken's work, particularly with regard to that part of the matrix that deals with environmental levels. I have assumed a hierarchy of sizes, or magnitude, of intervention. Habraken's hierarchy is based on territories and power because intervention in the physical environment occurs only as the result of decisions made by those in control of the site. His analysis of form, therefore, goes back to its ultimate source. My intention in this study is to stop somewhere short of that, because I am more interested in the form itself, and also because I lack the specific knowledge required to ground an analysis in socio-political issues.

In order of increasing size, the following four levels are used in analyzing settlement form: DETAILS, approximately hand-sized elements of building,
usually at an interface of two or more space-enclosing elements; BUILDINGS; DISTRICTS, an aggregation of buildings and open space smaller than the whole settlement; and CITY, referring to the urban entity.

An intermediate level between details and buildings, ROOMS, is not a particularly useful category in this study because of the lack of detailed maps, and also because changes at this level do little to alter the perceptual experience of cities. Further, there is the level of LANDSCAPE, which forms the context for the disposition of settlements. CITY is both "an image of material form emerging in the countryside as we move toward it", and a "spatial configuration" we inhabit. (Habraken, p. 118)

While I have made some reference to regional patterns of settlement, it is not the focus of this study; rather, I have sought to understand the CITY primarily at the levels in which we inhabit it - BUILDINGS, and DISTRICTS. The relationship between what we "inhabit", or experience from within, and what we perceive from the outside, as object, is crucial to our understanding of the physical environment. Movement at any level, within the city or the house, is guided by an image of the structure of the whole. Understanding of the CITY as a whole is associative, built up from an aggregation of experiences at the levels at which we inhabit the city. Until the advent of the hot air balloon and then the airplane, imaging of the form of cities was limited primarily to this sort of experiential collage, or to the abstract understanding provided by a map; thereafter, it was possible to understand the whole from a single perspective.

"Building form" and "urban structure" correspond roughly to the lower and upper ends of this range of levels, and further define the transformation processes outlined above. Districts and the city are structured by public open space, and transformation at these levels, therefore, may not literally involve addition, subtraction, or reconfiguration of materials. Street widening and alignment, for example, constitute a re-structuring of the form of the city, and does not involve material change at that level (but does at "lower" levels). Buildings, on the other hand, are habitable spaces enclosed by materials; details are materials.
The idea of continuity is related to the hierarchy of levels in that change which maintains continuity (virtually) follows the formal rules of the existing physical environment at whatever level(s) it intervenes. If we take the existing form as a starting point, any change we make belongs to a range of possible transformations, each successive move breaking more rules of the existing condition. For example, in considering the exchange between buildings and the street, if the "rule" in the existing environment is no setbacks from the street line, the range looks something like this:

In this specific example, a zone of exchange is created in moves that are increasingly discontinuous with the existing condition. The first move, a portal, is subtractive - the exchange is created within the form of the building. The second move, a porch, is additive - space is defined in front of the building by adding new materials in a new system of construction. The third move introduces a level change, and the last adds an open zone of landscape between the porch and the street. In general, continuity means that an intervention doesn't "move" very far down the range - or not at all.

The processes of transformation are consistent; that is, potentially observable, at all levels of the environment. The purpose of employing so general a framework is to expose differences in patterns of transformation between levels.

The analysis that follows is based on three forms of information: narrative histories, photographic images, and graphic abstractions (maps, diagrams) of five settlements in the Southwest. The narratives and images are presented first for each town, followed by a more comparative analysis. The narratives are not intended to be complete "capsule" histories, but rather to emphasize certain periods and events particular to place, at the same time collectively building up a general history of the region. Nor have I attempted to "fill in" all of the possible conditions inherent in the matrix of levels and
transformation processes for each town. This is in part because such complete data do not exist; also because I have chosen to limit analysis to transformations that have more meaning in the present.
SANTA FE

One of the first descriptions of Santa Fe after 1821 is from Josiah Gregg's COMMERCE OF THE PRARIES, a book written after Gregg had made several trading expeditions to New Mexico, Mexico and Texas from the Midwest. The following quotation describes Santa Fe as he saw it in 1831.

"A few miles before reaching the city, the road again emerges into an open plain. Ascending a table ridge, we spied in an extended valley to the northwest, occasional groups of trees, skirted with verdant corn and wheat fields, with here and there a square block-like protuberance reared in the midst. A little further, just ahead of us to the north, irregular clusters of the same opened to our view. 'Oh, we are approaching the suburbs!' thought I, on perceiving the cornfields, and what I supposed to be brick-kilns scattered in every direction. These and other observations of the same nature becoming audible, a friend at my elbow said, 'It is true those are heaps of unburnt bricks, nevertheless they are houses — this is the city of Santa Fe.'"  (p. 54)

"In carpentry and cabinet-work the mechanic has to labor under to great disadvantage, on account of want of tools and scarcity of suitable timber. Their boards have to be hewed out with the axe — sawed lumber being absolutely unknown throughout New Mexico, except what is occasionally cut by foreigners...

"In architecture, the people do not seem to have arrived at any great perfection, but rather to have conformed themselves to the clumsy style which prevailed among the aborigines, than to waste their time in studying modern masonry and the use of lime. The materials generally used for building are of the crudest possible description; consisting of unburnt, sun-dried bricks, cemented together with a species of mortar made of simple clay and sand. These bricks are called adobes and every edifice, from the church to the palacio is constructed of the same stuff. In fact, I should remark that though all Southern Mexico is celebrated for the magnificence and wealth of its churches, New Mexico deserves equal fame for poverty-stricken and shabby-looking houses of public worship.

"The general plan of the Mexican dwellings is nearly the same everywhere. Whether from motives of pride, or fear of the savages, the wealthier classes have adopted the style of Moorish castles; so that all the larger buildings have the appearance of so many diminutive fortifications, than of private family residences. Let me add, however, that whatever may be the roughness of their exterior, they are extremely comfortable inside. A tier of rooms on each side of a square, comprising as many as the convenience of the occupant may require, encompass an open patio or court, with but one door opening into the street, — a huge gate, called la puerta del zaguan usually large enough to admit the family coach. The back tier is generally occupied with the cocina, dispensa, granero (kitchen, provision store and granary), and other offices of the same kind. Most of the apartments, except the winter rooms, open into the patio; but the latter are most frequently entered through the sala or hall, which, added to the thickness of their walls and roofs, renders
them delightfully warm during the cold season, while they are perfectly cool and agreeable in summer. In fact, hemmed in as these apartments are with nearly three feet of earth, they made be said to possess all the pleasant properties of cellars, with a freer circulation of air, and nothing of the dampness which is apt to pervade those subterranean regions.

"The roofs of those houses are all flat azoteas or terraces, being formed of a layer of earth two or three feet in thickness, and supported by stout joists or horizontal rafters. These roofs, when well packed, turn the rain off with remarkable effect, and render the houses nearly fire-proof. The azotea also forms a pleasant promenade, the surrounding walls rising usually so high as to serve for a balustrade, as also a breast-work, behind which, in times of trouble, the combatants take their station, and defend the premises.

"The floors are all constructed of beaten earth 'slicked over' with soft mortar, and covered generally with a coarse carpet of domestic manufacture. A plank floor would be a curiosity in New Mexico, nor have I met with one even in Chihuahua, although the best houses in that city are floored with brick or squares of hewn stone. The interior of each apartment is roughly plastered over with a clay mortar unmixed with lime, by females who supply the place of trowels with their hands. It is then whitewashed with calcined yeso or gypsum, a deleterious stuff, that is always sure to engraft its affections on the clothing of those who come in contact with it. To obviate this, the parlors and family rooms are usually lined with with wall-paper or calico, to the height of five or six feet. The front of the house is commonly plastered in a similar manner, although not always whitewashed. In the suburbs of the towns, and particularly in the villages and ranchos, a fantastic custom prevails of painting only a portion of the fronts of the houses, in the shape of stripes, which imparts to the landscape a very striking and picturesque experience.

"Wood buildings of any kind or shape are utterly unknown in the north of Mexico, with the exception of the occasional picket-hut in some of the ranchos and mining-places. It will readily be perceived, then, what a flat and uncouth appearance the towns of New Mexico present, with houses that look more like so many collections of brick kilns prepared for burning than human abodes." (Gregg, pp. 107-109)

By his description of "the Mexican house", Gregg was obviously the guest of some of the wealthier families. Other visitors to the area described the "common" house as consisting of one room, the doorway covered with fabric or hides, and either no windows or only very small openings. The walls were whitewashed, and covered to five feet with calico or paper; the floors were hard-packed earth and a banco ran around all sides of the room. (Bloom, p. 177-78)

Others commented on the comfort of the adobe houses, and the difference between the inside and outside: a U.S. soldier wrote in his diary "I was
surprised upon entering them... I found everything very neat and clean and furnished very tasty" and "Nothing can exceed the comfort and convenience of the interior. The thick walls make them cool in summer and warm in winter". (Bloom, p. 177)

Santa Fe was the first permanent Spanish settlement in the Southwest, founded in 1609 by the governor of the northern province, Pedro de Peralta, in accordance with the Laws of the Indies. If a plan of the new town was sent to the Viceroy as required by the Ordinances, it has since been lost – the earliest map, drawn by José de Urrutia in 1776, shows the structure and extent of the built form at that time (fig. 11). The structure of the town in general follows the Laws of the Indies, and several of the specific ordinances were carried out to the letter, including the siting on a plain between river and mountains, and the location of the church on a site removed from the Plaza. The orientation, original rectangular shape of the Plaza, and location of the Governor's palace on the Plaza also correspond to the ordinances.

Comparison with the Gilmer map of 1846 (fig. 12) reveals more about the structure of the embryo town, showing patterns of growth at the building, district, and city levels. Another valuable description of Santa Fe in the Mexican period deals with changes made in the public spaces just before the map was drawn. It is from a 1912 interview with the son of Governor Albino Perez.

"(Governor Lejanza's) first steps were taken in making improvements within the plaza square where there was not a single tree nor any vegetation, and in the same condition were the streets running out of the square in different directions. He commanded that uncultivated trees be brought from the mountain east of Santa Fe, and caused them to be planted symmetrically around the Plaza and in the streets...

"In addition, General Martinez ordered that a plot of ground be selected on the Northwest side of the city for the plantation of an Alameda or Park of Recreation, which land was chosen by himself near the ancient country chapel of the Virgin of the Rosary, south of the same, wherein cottonwood trees and shrubs were planted....(description of how the Alameda was irrigated with an acequia from the acequia madre)....At the same time the work was being done in the acequia, the work also proceeded on the Alameda, levelling the land and forming the streets which started from the center of the square in different directions, an adobe wall being constructed all around the square; seats were placed along the streets and in the center of the circle reserved for a cock pit where those addicted to the game of cock fighting congregated..."
to see the fights between the animals in which game money bets were made. On the west side, outside the enclosure of the Alameda, an adobe house was built to serve as residence for the man who was going to care for the Alameda. After two or three years of being planted, the trees' ramage served as shade during the hot summer days for the persons who sought rest and comfort under their shade, and the same thing was done under the shadow of the cottonwood trees found in the Public Plaza and the streets. The butchers who killed sheep placed the meat on perches which they place under the cottonwoods planted in front of the Old Palace; on the west side, under the spacious porch of the Palace, the bakers were installed together with the fruit vendors and others who sold diverse kinds of food for the people who depended on the market for their supply, for at that time there was no public building for the sale of such articles. Besides that, there were several women who cooked dinners which were served to those who wished to take them there, and under the shadow of the cottonwoods the tables were placed for the boarders.

"In June of 1845, in order that the people of the Capital might have amusement after doing their labor during the week, the idea was conceived of constructing a bull ring, in order that the people who, with rare exceptions, had never seen bull fighting in New Mexico, might have an idea of that diversion and admire the courage of the bullfighters confronting the furious bulls, as it was the custom in the cities and towns of the Mexican Republic. ...Waiting for the coming of the Toreadores and the bulls brought by them, tall boxes were constructed around the public plaza, made with strong timber and well secured to resist the hard knocks and attacks of the bulls when they went after the banderilleros. ...Before the construction of the stall boxes and fence around the Plaza, there was in its center a Pyramid that had existed for many years and that was built after the independence of Mexico from Spanish rule. This pyramid consisted of a log or post, measuring, more or less, fifty feet in height, having as a base three square wall around, which walls were in the form of steps for ascension and descension. The first step was five feet high and there was sufficient space on the top for the seating of several persons who might wish to stay there for diversion or rest; but most of the time those who congregated there were idle and evilly-inclined people, drunkards and gamblers, who were the cause of scandal to the families. Governor Martinez being persuaded that the pyramid ought to be removed from there ordered its destruction, and so it was done." (Read, p. 92-95)

Lt. Pike described the Alameda in Chihuahua as being similarly situated on the outskirts of the city; there along the river, but functioning mostly as a promenade, (i.e. a linear, movement-generated form), rather than as the focus for a single activity. The description of Santa Fe's Alameda reads like that of the main plaza, with streets beginning at its center; adobe walls along the sides like buildings. In fact, the size, shape and orientation as shown on the Gilmer map is almost exactly the same.
The use of the portales to shelter vendors is consistent with the intention of law #115 in the Codice, which calls for the plaza and the main streets going out from it to have portales "for the convenience of the vendors who generally gather there".

Perez' narrative depicts a rather pleasant setting and activities, and it is worthwhile to consider the contrast between this Hispanic description and Anglo observers who saw nothing but disarray and poverty. One might conclude that the idea of the plaza (as an organizing element, with its associated streets, portales, civil and religious buildings, etc.) was the important thing – in Perez' mind, a clear order existed in in the built form of Santa Fe, embedded in the Hispanic culture and invisible to the Anglos.

In the Spanish and Mexican periods, commercial activity was usually located in the front rooms of houses on the Plaza. Within 10 years of American occupation, commercial activity had grown to require the following buildings: 1 hotel, 1 printing office, 25 stores, 3 shoemaker's shops, 1 apothecary shop, 1 bakery, and two blacksmiths' shops (Crouch et. al., p. 86).

In an 1847 article in the SANTA FE REPUBLICAN, the hopes expressed for the city's growth also reveal the prejudicial Anglo attitude toward the Hispanic environment:

"The merchants have fitted up large and convenient rooms in place of the small and crowded ones, and the doors, windows and other marks of improvement that strike the eye everywhere indicates a most rapid improvement. —The ruins of old houses which were scattered all over the town, have given place to new and better built ones, and as fast as workmen and materials can be procured, new buildings are going up. Not a street in the place presents the appearance it did, this time one year ago, and if things continue in one more year, the whole appearance of the city will be changed." (Bloom, p. 173)

That so much of Santa Fe's Spanish form and structure remains is due to a number of events of the last two decades of the 19th century. The most important was undoubtedly the decision by the Atchison, Topeka and Santa Fe railroad company to bypass the town, heading southwest from Las Vegas over the most accessible pass and ending up at Galisteo, about 8 miles south of Santa Fe. There had been some expectation on the part of the town's
businessmen that the Denver and Rio Grande would bring a line through from the north and connect Santa Fe with Galisteo and points south, but the D&RG chose not to build that line, leaving Santa Fe without a railroad connection. The business leaders and city council, faced with certain economic decline, quickly raised enough money and made the necessary arrangements to build a spur from Galisteo to the southwestern edge of the city, 3/4 mile from the Plaza. (Simmons, p. 214) This indirect link to the main artery of Anglo cultural transfusion served to buffer Santa Fe from the kind of wholesale change experienced by other railroad towns.

More subtle, but in the long run of great importance to the preservation of Santa Fe’s Hispanic environment was a change in attitude: "A psychological change toward the country and its Spanish-Mexican-Indian culture took place in 1884, when the writer Charles Loomis began to praise the beauty of the Southwest" (Lamar, p. 169). Writing about Santa Fe around the turn of the century, historian Bainbridge Bunting says that "anglicization" was embraced by the well-to-do of both Anglo and Hispanic populations, but that there was a counter-current of "conservationists", a loosely knit group of artists, historians, anthropologists, "plus a group that lived on remittances from their families in the East". (Bunting, 1985, p.6) The archeologists Adolf Bandolier and Edgar Hewett, along with others, promoted "conservation" of Pueblo and Spanish architecture, and carried out a restoration of the Governor’s Palace in 1916. Collectively, their influence on the future direction of planning in Santa Fe was strong – Hewett wrote that between 1912 and 1917, 90 percent of all remodelling and 50 percent of all new houses in the city were in the "pueblo" style. (Bunting, p. 6)
Figure 3. San Francisco Street, Santa Fe, 1865
Museum of New Mexico

Figure 4. San Francisco Street, Santa Fe, 1885
Museum of New Mexico
Figure 5. San Francisco Street, Santa Fe, ca.1900
Museum of New Mexico

Figure 6. courtyard, Santa Fe, contemporary view
Hope A. Curtis
Figure 7. Burro Alley, Santa Fe, ca.1885
Museum of New Mexico

Figure 8. Alto Street, Santa Fe, 1910
Museum of Santa Fe
Figure 9. "territorial style" house, contemporary view
Figure 11. Urrutia Map, 1776
Figure 12. Gilmer Map, 1846
Figure 13. Hartmann Map, 1886
ALBUQUERQUE

The popular belief that Albuquerque was founded in accordance with the Laws of the Indies is based on an inflated report by then Governor Cuervo to the Viceroy, the Duke of Alburquerque. Cuervo, only temporarily appointed to the post, and desiring to be confirmed as permanent governor of the province, sought to impress the Viceroy both by naming the new villa after the Duke, and by assuring him that the settlement fully complied with the Laws of the Indies. His report stated that 35 families (252 persons in all) had built their houses and corrals and settled in the new town, that a church had been built and the priest’s house begun, and that work had also started on the government buildings (casa reales) on the Plaza. He reported that the acequias were functioning, crops planted, and that the town was in good order, "well-arranged". (Simmons, 1982, p. 87)

The reality of Albuquerque's founding is more of a resettlement of ranchos abandoned during the 1680 Pueblo Revolt. As a concentration of settlement in this period, Albuquerque was preceded by the villages of Atrisco, on the west bank of the Rio Grande opposite the site of Albuquerque, Alameda, a Tiwa village about 6 miles to the north, and Isleta, 12 miles to the south. There were scattered ranchos inbetween. Testimony in later investigations into Cuervo's administration revealed that the number of original settlers was closer to 100, and that they had moved into existing ranchos that stretched for 1 league (2 1/2 miles) along the river. (Simmons, 1982, p. 89)

Albuquerque's dispersed settlement pattern persisted throughout most of the 18th century. Reports from a Spanish general in 1726, and priests in 1754 and 1776 describe the "town" as strung out along the river. Father Manuel Trigo in 1754 wrote tongue-in-cheek of the "site" of the villa of Albuquerque, "...for the settlers, who inhabit it on Sunday, do not live there. They must stay on their farms to keep watch over their cornfields..." (Simmons p. 91) What Simmons refers to as a "lack of genuine urbanism" has also been described as a settlement pattern combining "urban life and rural work". (Jones, p. 241) Whether the settlers commuted daily or weekly between town and field is a matter of some disagreement (Jones, p. 241, Simmons, p. 91); the reality probably allows for some variation. In fact, this practice has
continued into recent times in some communities in northern Mexico, with family members travelling to outlying farms as required to plant, maintain and harvest crops, while the primary house is maintained in the village. (author's experience in Banamichi, Sonora, 1972) Simmons writes of Albuquerque that "after a church was up and functioning, the citizenry evidently erected second homes, or 'Sunday residences' on or near today's Old Town Plaza....Only gradually in later years did a body of permanent residents take root around an emerging plaza." (1982, p. 91)

Most historians of the Spanish Borderlands agree with Trigo's assessment and attribute this departure from the Iberian urban village prescribed by the Laws of the Indies simply to the need to protect distant fields from raiding Indians. From the time of its founding in 1706 until well into the Anglo territorial period, Albuquerque and the other middle Rio Grande settlements were threatened by Apache raids. Between about 1750 and 1780, attacks by northern Comanche tribes put additional stress on the dispersed settlements.

In 1777, the newly appointed governor of the province received instructions from the commandante general of the Provincias Internas to collect the scattered ranchos along the Rio Grande into "pueblos in good order, walled, close to fields of labor, and filled with fifty families each". According to a report by Fray Agustin de Morfi, Governor de Anza "reduced the villa of Albuquerque to a regular form" in 1779 (Reps, 1979, p. 48) There are no records of what this actually entailed; however, Albuquerque did experience some growth in population during this period, as ranchers moved in from outlying farms. The plaza in front of the church was designated a plaza de armas, for the collecting and parading of troops called up to pursue Indian raiders. Also during this period some more compact villages were founded.

"Plazas" were towns of a few to a dozen extended families, the houses contiguous and facing inward, enclosing a common plaza. (fig. 14) This form of settlement continued to be used in New Mexico into the Mexican period.

Once Governor de Anza had eliminated the Comanche threat with an aggressive campaign of pursuit into what is now Colorado, the pressure for concentrated settlement lessened, and new settlements were created in the middle valley. The villages of Ranchos de Albuquerque, Los Barretas, Los Griegos and Los
Duranes are examples of this growth. These outlying settlements survived into the 20th century as barrios (ncity of Albuquerque.

Another important factor in the creation of these new settlements was the increasing shortage of arable land around Albuquerque. The Spanish practice of dividing possessions equally among all the sons and daughters, combined with the need for frontage on an acequia led eventually to a pattern of long narrow plots fronting on the ditches, which in some cases after generations of division and subdivision, were only a few yards wide (Johnson, p. 10). In 1753, a group of Albuquerque citizens petitioned the governor for a grant of land on the Rio Puerco (to the east), citing lack of land and means of earning a living as justification for their request. Their petition was granted the following year, along with another grant to some "peaceable Indians" at Carnue, at the foot of the Sandias. (Simmons, 1982, p. 107)

This return to a more dispersed pattern of settlement (although it differed from the earlier pattern in the important respect that the new settlements were more collective in nature), no doubt detracted from the growth of Albuquerque's population; however, the importance of the villa as a center of civil, religious, and military functions increased, since none of the new villages had its own cabildo (town council). The petitions for the Puerco and Carnue grants, for example, were heard in the casas reales (courthouse) on the Plaza. As pressure for irrigable land around Albuquerque increased in the second half of the century, disputes over ownership and boundaries became frequent, and the activities in the casas reales drew many people to the Plaza. The dominant presence on the Plaza was the church of San Felipe Neri. The original church was constructed on the west side of the Plaza beginning shortly after the villa's founding. A walled camposanto was added in front in the 1750's. Lack of maintainence of the adobe structure led to its collapse in the winter of 1792–3, and the present building on the north side of the Plaza was begun the following spring.

Albuquerque's role as a center for economic activity in the Middle Valley also contributed to its population growth. Beginning in 1753, Albuquerque was designated as the collecting point for the annual trading train south to Chihuahua and Ciudad Mexico, which left in the fall (Simmons, 1982, p. 116).
The villa's central location in the Rio Grande Valley and on the Camino Real contributed to its economic importance.

A census taken in 1822, just after Independence, included settlements for three leagues along the Rio Grande and recorded a population of 2,302, living in 416 houses. Its listing of occupations provides some insight into Albuquerque's economic structure at the time. There were 297 farmers, 15 merchants, 13 craftsmen, 121 day laborers, 3 teachers and 1 priest. The presence of merchants and craftsmen indicates the beginnings of economic diversification, which increased as other Missouri traders followed Becknell's tracks to Santa Fe and continued southward on the Camino Real. Simmons characterizes this activity as a "minor rush", and says that the New Mexico market was quickly saturated, causing traders to look southward to Chihuahua and Durango. A few wealthy Albuquerquians entered into commercial activity, buying merchandise in St. Louis and Westport, and selling it in Chihuahua. (1982, p. 132) This activity resulted in few recorded changes in the physical environment, although one can imagine that American-made articles appeared in the houses of those who could afford to buy them, and that perhaps some Albuquerque residents expanded and remodelled their homes to accommodate increased commercial activity.

American military occupation of New Mexico began in 1846 when Stephen Kearny's troops marched unopposed into Santa Fe in 1846. After the treaty of Guadalupe Hidalgo was signed in 1848, the Albuquerque post of the U.S. cavalry was established, adding significantly to the town's economy: it employed 13 civilians, rented buildings for offices, storehouses, and quarters, and bought corn, mutton, flour and beans, hay and firewood. In addition, the troops patronized the town's merchants - the first saloons were established in the 1850 - and the first flour mill was built. Military business introduced the first currency into what had been primarily an exchange economy.

The market created by the military post was served in part by Anglo merchants who settled in Albuquerque in the 1840's and 50's. The Anglo population outside of the military "numbered no more that several dozen" in the 1850's. Ten years later, there were still only about 50 resident Anglos, a dozen of whom were women. (Simmons, 1982, p. 149)
For the most part, Anglos were assimilated into the predominant Hispanic culture. Simmons notes that since most of the arable land was already under cultivation, American immigrants to Albuquerque "entered into the life of the community as merchants, tradesmen, artisans, and innkeepers... As providers of goods and services in what was predominantly a Hispano town, they found it both expedient and desirable to adapt wholeheartedly to prevailing custom. Many of these men married native Albuquerqueans and gained thereby important social connections. At no extra trouble, they also acquired what was then termed a 'sleeping dictionary', that is, a wife who could teach them Spanish. Practically all business and social discourse was in that language...No Anglo could function in Albuquerque... without at least a working knowledge of Spanish." (1982, p. 202).

The Plaza in this period was described by one soldier as being 2 to 3 acres in size; it extended further east and south than it does at present. (Reps, 1979, p. 48; Simmons, 1982, p. 170) By the late 1860's, there were nine mercantile establishments on and around the plaza. Susan Magoffin recorded this perfunctory description of one such store on the plaza in 1846: "The building is very spacious, with wide portals in the front. Inside is the patio, the store occupying a large room on the street. This is filled with all kinds of little fixings, dry goods, groceries, hardware &c." (Drum, p. 152)

In 1854, Albuquerque was designated the county seat and an adobe courthouse was built on Main Street north of the Plaza, replacing the casas reales of the Spanish and Mexican periods. The cast stone courthouse that appears south of the Plaza on the earliest Sanborn map was completed in 1886.

To the west of the Plaza were several acres of military warehouses, most of which were burned during the initial retreat of Union troops in 1862. The year-long Confederate occupation of Albuquerque and the Middle Valley, followed by a severe drought, temporarily stalled economic growth. Abandonment of the army post in 1867 was another blow. Yet the decade of the 1870's was one of growth, due to an expanding market for mercantile goods throughout the Territory. Albuquerque merchants took advantage of the opportunity to act as wholesalers to smaller firms.
Anticipation of the arrival of the railroad fueled a flurry of land speculation towards the end of the decade. The Atchison, Topeka and Santa Fe Company had completed track through Las Vegas and was starting south from the junction at Galisteo, below Santa Fe. Three prominent Anglo businessmen acted as agents for a new real estate company actually owned by the AT&SF, buying farm land and deeding it to the company in return for a 50 percent share of the resale profit once the railroad had reached the town. (Simmons, 1982, p. 218)

The location and orientation of the tracks was determined by the straight line between where the railroad came around the Sandia Mountains and the best river crossing about 12 miles south of Albuquerque. The town was situated in a bend in the river, not quite 2 miles west of the line drawn by railroad engineers. The depot was to be located on the road leading from the Plaza to Carnue Canyon.

When the tracks actually reached Albuquerque in April of 1880, an all-day celebration was held, during which speeches were given, predicting Albuquerque's rise to a city of major importance, and heralding the beginning of a new era. The ceremonies were half in English and half in Spanish, a balance that was about to be upset. This intention was proclaimed by one Anglo speaker at the ceremonies: "Today the new civilization of the East is brought into direct contact with the ancient civilization of New Mexico. Today the bell of the locomotive tolls the death knell of old foggyism, superstition and ignorance, and proclaims in clarion notes that henceforth knowledge, education, advancement and progress shall be the right of our people..." (Simmons, 1982, p. 208)

The New Mexico Town Company hired a civil engineer associated with AT&SF to layout the new town. There were to be 17 streets running north and south between the tracks and the edge of Old Town, and 4 on the east side of the tracks, crossed by as many streets running east and west. What property the Town Company didn't hold was bought up by other Albuquerqueans, Anglo and Hispanic, for subdivision and resale to individual owners. The first "prestige suburb" was east of the tracks, raised above the flood plain on the first of a series of old river terraces ascending to the foot of the mountains.
Construction of the new business district along Front Street was well under way by 1881 (fig. 18), the first frame buildings erected quickly with lumber brought in on the railroad. Later buildings along Railroad and Gold Avenues were constructed in a variety of materials, including cut and cast stone, brick and iron as well as adobe. The new buildings also represented a range of imported styles.

A mule-drawn street car system was inaugurated in 1880, providing a physical connection between the two towns. Whatever the attempts to tie Old and New Albuquerque together, competition between them was inevitable. There were battles over the location of the county courthouse and the post office, and once two post offices were created as a compromise, there was a battle over the name itself. Although Old Town won the courthouse, New Town inevitably gained importance, economically and socially, during the 1890's.

The large numbers of Anglos arriving on the railroad after 1880 brought a very different attitude than the early immigrants who adapted to Hispanic culture. They generally held a disparaging view of Hispanos and their physical environment. Simmons writes that "the latest breed of Anglos was impatiently progressive and smugly confident that it was their manifest destiny to build a new community trackside that would be a perfect model of the standard American midwestern or eastern town" (1982, p. 234).
Figure 14. plaza town, contemporary view
Figure 15. James Street, Albuquerque, 1880
Albuquerque Museum

Figure 16. Morris Street, Albuquerque, 1897
Albuquerque Museum
Figure 17. Plaza, Albuquerque, 1890
Albuquerque Museum

Figure 18. Front Street, Albuquerque, 1881
Albuquerque Museum
Figure 19. Albuquerque in 1886
Figure 20. map of Albuquerque in 1898
SOCORRO

Socorro was originally established as a mission to the Piro Indians in 1626. The settlement was sacked during the Pueblo Revolt, and the Piro moved south to establish "New Socorro", one of six satellite settlements of El Paso Del Norte, after the reconquest in 1693. It was not until 1816 that the site was resettled by 70 families as a center for their ranching activities. It remained a small poblacion with only incidental growth, in part because it was across the Rio Grande from the Camino Real between Santa Fe and Ciudad Chihuahua, and also because it was continually subjected to attack by Apache and Navajo Indians. The town experienced a surge of growth in 1854 when Fort Craig was established by the U.S. Cavalry; the silver mining activity that began there in the mid-1860's was something of a buffer when the Fort was abandoned in 1885. By that time, however, the railroad connecting Socorro with points north and south had been completed, as had a spur between the mines at Magdalena to the west and the new smelter. This intensification in mining activity led to a period of boom years for the town - the years just after 1890 were peak years in population (5000) and economic activity.

There is no information documenting the 1816 layout of the settlement, and the shape of the plaza by 1886 is the result of successive encroachment and decay, comparable to the processes that shaped the plazas in Albuquerque and Santa Fe. The Spanish plaza occupied the area to the north of Kittrel Park, with the Garcia and Baca houses defining one corner of it. (Kittrel Park was established in the early 1880's, adjacent to the Plaza, in what was at the time, open fields.) In his historic survey of Socorro, John P.Conron describes the "overall arrangement of buildings" as "...organic; that is, the square and rectangular buildings were erected without regard to a grid street pattern. Although structures ringed the plaza, their random placement and emanation from the plaza is medieval in origin." (p. 13) A few elements of this description warrant comment - while the street pattern lacked a precise grid, it is still governed by right angle relationships based on the cardinal points. Building orientation varies by 5 - 15 degrees, but is not random.
The linear and courtyard house forms characteristic of the Spanish and Mexican periods resulted from a "process of accretion where one room after another was added as needed". (p. 10) This pattern is still prevalent in the first Sanborn map of the town drawn in 1886, partly because, as Conron notes, "traditional adobes continued to be built after new styles were introduced". (p. 11)

The Anglos who came to live in Socorro before the railroad was completed were primarily associated with Fort Craig, either men in the cavalry, or merchants serving its needs. Supplies arrived by wagon train, and transformations of the physical environment were limited to things that could be transported by that means. What is generally called the "territorial style" throughout the Southwest is the result of these relatively small scale changes. Materials that could be brought by wagon included milled lumber, paint, glass, and lime plaster. The "details" these were employed to make were derived from the Greek Revival style, (even though by mid-century it had been supplanted by other, "Victorian" styles in the East): brick copings in a rowlock pattern suggesting dentils, square porch columns on a wood plinth, door and window moldings with pedimented lintels, sidelights to front doors, and architrave moldings. Besides these additions at the detail level, some dimensioned lumber was also available for porch and roof construction - additions at the building level.

Finally, during this early period of Anglo influence, Conron notes the appearance of one new "plan type" - a square plan with a central hallway and rooms arranged symmetrically on either side. (p. 12) The 3-dimensional form of this plan, with its hip roof, porch, and figure/ground relationship to its lot does indeed belong to the Anglo town. There is, however, a precedent for this type of plan in Hispanic culture. The hallway is called a zaguan and it was often open at either end, defining an intermediate zone of environmental control and privacy.

It is interesting that the Anglo version of this plan, which continued to be built as a house form beyond the turn of the century, is now associated with Hispanic culture since many of these older, central neighborhood have become Hispanic barrios. The square plan and hip roof are antithetical to the
traditional growth pattern described above, and in general these houses have faiored poorly for additions.

After 1880, the town grew south and southeast toward the railroad and depot. The intervening land was platted in a regular grid pattern, numbered streets running north/south, and named streets east/west. The business district expanded along Manzanares Street, away from the Plaza. A block of buildings on the south side of the Plaza destroyed by fire in 1886 was never completely rebuilt, as most of the businesses relocated along Manzanares Street. (Conron, p. 45) New residential districts were added to the city, laid out on the Anglo block pattern of narrow deep lots backing on an alley; houses centered on the lots. The houses were constructed in frame or brick in various of the revival styles imported from the East.

Socorro's economic boom was stopped short in the 1890's by two unrelated events. Silver was demonetized about 1893, resulting in the closing of most of the mines west of town – the smelter closed in 1895. In the middle of the decade, a severe flood from the mountains to the west destroyed much of the southeastern part of the town near the depot; many of the people who lost property and buildings chose to go elsewhere, and the town experienced a decline in population until after the turn of the century.
Figure 21. Socorro in the 1880's

Figure 22. Plaza, Socorro, 1882-3
LAS VEGAS

In 1821 Luis Maria Cabeza de Baca petitioned the Diputacion General in Durango, Mexico (capital of the Provincias Internas) for 431,653.65 acres in the area known as Vegas Grandes, which was granted to him in 1823. De Baca, however, was subsequently driven off the land by Indians and resettlement did not occur until 1835, when a request by 29 families from San Miguel del Bado, in which jurisdiction the Vegas grant lay, was granted for the same land, with some conditions attached. One was that any newcomers to the settlement would be granted the same privileges as the original 29 families; another stated that the settlers should provide lots for residences, and construct a wall surrounding the town. The grant "set aside 125 varas for gardens, 25 varas for a road to the watering place, and 75 varas on the south for more gardens. The gardens and roads were to be placed opposite the square plaza, and across the square a ditch was provided for watering the land". (Laumbach, p. 247)

There are few descriptions of the physical form of Las Vegas; the wording of Laumbach's 1959 article, from which the above quotation is taken, suggests that the author was not familiar with the Laws of the Indies; or that the records she worked from were a poor translation of the Spanish original. The "gardens" were probably the suertes granted to each settler for subsistence farming. There is also little in the description that suggests the plaza form of the town as it appears on the 1883 Sanborn map, and in early photos (figs. 23, 37).

Las Vegas' location on the eastern slope of the southern Rockies made it one of the first stops on the Santa Fe trail, thus ensuring a certain amount of economic activity in the early years. Susan Magoffin and her husband passed through Las Vegas in 1847 on their way to Santa Fe; her diary mostly describes the people she saw and the meal served her party by a local family, but she did note the adobe houses built "compactly about the plaza". They had few or no windows on the outside walls, but the interior courtyard had openings into the rooms. (Drum, p.43)
Only one building in the town prior to 1879 was not of adobe; that was the stone courthouse. Don Jose Albino Baca built a large house in 1855, described as the first house in New Mexico to have a second floor, and as being quite large, with a patio, porches and balconies. (Laumbach, p. 251) One story buildings weren’t necessarily a condition of the frontier — a 19th century photograph of Chihuahua shows the area surrounding the plaza to be entirely single story buildings.

An 1846 account described a large open space in the middle of the town; streets running in the cardinal directions; about 100 adobe houses with parapet walls and "spouts"; and a ditch supplying water for the town. (Laumbach, p. 250)

It seems that Anglos tended to view the Hispanic plaza as a void, a negative space, "in the middle" of the positive volumes of the buildings. I think the Spanish understanding, expressed in the Laws of the Indies, was a reversal of that view: that the plaza was the origin — more of a "positive". Perhaps it can be best explained in terms of a figure/ground relationship, where in Hispanic culture the plaza is actually FIGURE in its social and spatial importance.
Figure 23. Plaza, Las Vegas, 1879-80
Museum of New Mexico

Figure 24. Plaza, Las Vegas, 1895
Museum of New Mexico
Figure 25. street, Las Vegas, 1885
Museum of New Mexico
Figure 26. Las Vegas in 1882
The Santa Cruz valley was originally settled as part of the system of missions and visitas under Padre Kino in the early 1700's. In 1744 and 1747, the Spanish king approved advancement of the military frontier to the Gila River in response to the threat of French expansion westward from the Gulf of Mexico, and presidios were established in Alta Pimeria. The presidio at Tubac was one of these, situated some 30 miles south of the present site of Tucson. It had a combined civilian and military population of about 500 in the 1860's. In 1772, instructions were received from the viceroy to relocate the presidio to Tucson; it is a reflection of the scarcity of funds and personnel on the frontier that this was not accomplished until 1776, and further, that the presidio walls were not completed until 1782. The presidio was approximately 300 yards on a side, bounded by 12 foot high adobe walls three feet thick at the base. It had a single gate centered on the west side, about which the first civilian settlement grew up. The interior of the presidio was split by a row of buildings into two plazas, with military offices, stores and quarters built along the walls. This pattern was maintained after the presidio walls came down. In 1791, in an effort to induce further settlement of the area, the governor of the Provincias Internas, headquartered in Arizpe, set aside four square leagues around each presidio for civilian settlement. (Mattison, p. 281) In fact, this had little impact on population growth in the region: like the Rio Grande settlements, the Santa Cruz and San Pedro towns and ranchos were subjected to constant attack by Apache Indians. At the beginning of the period encompassed by this study, Tucson had a population of about 1100 persons, approximately 500 of whom were Spaniards. (Sonnichsen, p. 26) They occupied an area of less than two square miles, engaged primarily in subsistence agriculture and stock raising.

In his narrative history of Tucson, C. L. Sonnichsen describes the town in the following way:

"At the end of the Spanish period, just before the revolution of 1821, Tucson was a moderately prosperous village in which Spaniards and Indians lived side by side, but the native population was slowly giving way to Hispanics and mixed-bloods. Retired soldiers were occupying fields which once belonged to the Papagos, though they were not allowed to take possession of lands controlled by the mission. Other Spaniards had come up from the south in
response to the settlement law of 1791, which set aside four square leagues around each presidio for settlers. There was trouble between mission Indians and settlers, giving a preview of problems that were to plague the community for many years to come." (p. 27)

During three decades of Mexican administration, Tucson experienced a general decline – the economy was disrupted by Apache raids, the mission was weakened by secularization in 1828, and the Indian population was reduced due to disease and a declining birth rate.

The first Americans who came to Tucson during this period were trappers looking for beaver along the Gila and Santa Cruz rivers in the 1820's. The "Mexican War" in 1846 brought U.S. soldiers to the area, and when the Gadsden Purchase was finalized in 1854, U.S. troops took charge of the garrison, bringing with them other Anglo settlers who could make a living serving the military's needs.

Sonnichsen describes the period from the mid-1850's through the American Civil War as "the great transition" in Tucson's history; a transition related to developing communications and transportation linkages to the rest of the United States. The first mail routes became dependable at the end of the 1850's, the regular arrival and departure of stage coaches (at 1:30 pm on Tuesdays and Fridays for westbound mail and passengers, and at 3:00 am on Wednesdays and Saturdays for eastbound coaches) (p. 43) imparted a new rhythm to the town's life where contact with the outside world had been limited to infrequent and intermittent military and government-controlled commercial expeditions.

According to Sonnichsen, stage coaches were followed by wagon trains as the number of California immigrants choosing to take the southern route through Tucson rose. This was a period of economic growth for the town: the mines in the region became active again and there was an increase in military and Indian agency personnel whose needs generated a corresponding increase in trade. The population doubled between 1850 and 1860 – the census of that last year counted 623. By 1858, there were 3 general stores, 2 butcher shops and 2 blacksmiths; 1859 saw the first saloons, and a grist mill on the Santa
Cruz; and by 1869 there was even a brewery and beer garden established by a German immigrant. (Sonnichsen, p. 59)

The "business center" of Tucson was Calle de Correo, renamed Pearl Street in the Anglo Territorial period. The original name indicates the location of the post office; opposite that was the Buckley House, which provided accommodations for travellers and horses as well as storage for merchandise prior to sale. Contiguous with the Buckley house complex was Pacheco's blacksmith shop and residence. The courtyard complex occupied on one side by the post office contained a store on the side fronting Main Street. (Sonnichsen, p. 43)

The irregular pattern of this settlement derives in part from Tucson's origin as a Spanish presidio, which occupied the approximate square containing the Plaza Militar and the Plaza de las Armas in Fergusson's 1862 map. (fig.31) The civilian community established itself just outside the main gate, within a bend in the acequia serving the presidio. The initial southerly offset (with respect to the gate) began a pattern of development that shifted southward around the edge of the old presidio, between its plazas and the Plaza de la Mesilla. The 1883 Sanborn map shows the greatest density centered around Pennington and Congress, and Main and Meyer Streets. A closer look at the original "business center", along Pearl Street, illustrates the physical transformation processes of addition and replacement (fig. 38)

The Sanborn map of 1883 also shows that the area underwent a "cultural replacement" process - the uses indicated on the Sanborn map are "Chinese Laundry", "Chinese Opium Den", and Chinese Grocery". There had been Chinese in Tucson since the 1860's; when the railroads were completed in 1880, a group settled in this area of town, and had developed over 100 acres of "truck gardens" along the Santa Cruz flood plain by 1884. Pacheco's blacksmith shop was altered, by the addition of a new row of rooms, among other things, to accommodate the "lodging house" for Park Brewery, part of the new "entertainment district" west of the acequia.

Tucson was incorporated as a town in 1874, occupying two complete sections: streets and blocks were laid out parallel to the section lines, and street
numbers began on the eastern section line – rather than at the center of
town, an indication of the power of the survey grid in ordering Anglo towns.

The 1870's saw the first public school, and consequently, a first small influx
of unmarried Anglo women. Up until this time, Anglo merchants often
married Hispanic women, thereby assuring cultural assimilation, and in the
case of those who married into wealthy families, access to the important
social/economic network. The availability of Anglo women in the community
marked the beginning of an important cultural shift. Sonnichsen notes that
intermarriage became less frequent throughout the 1870's and 1880's; and that
newspaper accounts of social events contained fewer and fewer Hispanic
names. (p. 88)

Although a "cause and effect" relationship would be difficult to document,
one can at least speculate about the effect these Anglo women had on their
physical environment. Certainly their attitudes are well known through diaries
such as the one Susan Magoffin kept of her experiences in travelling the
Santa Fe Trail and maintaining a household in Santa Fe in the late 1840's.
The adobe house with its dirt floors and constant need of attention to
maintain whitewashed walls and dirt roof seemed primitive to Anglo women
used to raised wooden floors, glass windows, and painted walls. Beginning
with their immediate environment, the house, transformations occurred at the
"detail" level – rooms were filled with furniture brought by wagon from the
East, glass windows and trim were installed in existing openings in adobe
walls, wood boards were added to dirt floors...... such transformations all fall
under the category of addition. They resulted in what has been architecturally
termed the "territorial style", which can loosely be defined as the addition of
classicizing elements to existing adobe buildings. (Sobin, 1978)

While some prosperous Anglo families continued to live in and transform
their courtyard houses, others constructed new houses at the earliest opportunity.
(This phenomenon was not limited to Anglos) That is, transformations
occurred at the "building" and "fabric" levels – new houses were inserted into
the existing fabric, and entire neighborhoods of Anglo planning and architecture
were added to the towns. This addition of new fabric is exemplified by the
infill of the old military grounds, now known as the Armory Park
neighborhood. It was laid out in regular lots and built in the Anglo pattern of "solid" volumes in the center of "open" but private territory.

In a less direct way, the existence of Anglo families in Tucson created the need for certain related institutions - by the late 1870's there were three schools, Methodist and Episcopal churches, and a hospital (although this was Catholic - St. Mary's), and a public bath house. These buildings represent addition/infll at the district level; they were isolated structures placed in the existing fabric - in a manner unlike their Hispanic counterparts. An example of this can be seen in Fig. 30 of the Plaza de las Armas, where the Protestant church stands as an object in the middle; access to the church is without reference to the existing pattern of movement.

Not all of these transformations occurred at the district level: some buildings were reconfigured or added to as a result of the cultural shift. An example is the Cosmopolitan Hotel on the corner of Pennington and Main. An 1874 photograph shows an adobe structure with a heavy portal, and a subsequent photograph of the same building, re-christened "The Orndorff", shows that one wing of the building has added to it a framed second floor and balcony, complete with a bracketed cornice (Sonnichsen, pp 100, 101).

Anticipation of the approaching railroad led to a boom in real estate values in the late 1870's; when the first train actually arrived on March 20, 1880, "prices on practically everything were rapidly revised downward"...(Sonnichsen, p. 105), causing the financial ruin of several of Tucson's most successful merchants - Sonnichsen lists five concerns which all either sold off stock to their creditors or went bankrupt in the four years following. (p. 105) This loss, however, was limited to individuals; in the long run, the railroad only hastened economic and population growth in Tucson. The increase in Anglo population in proportion to the Hispanic population resulted in an acceleration in the pace of environmental change. In 1882, the ARIZONA CITIZEN described the "change in building styles" due to the replacement of adobe with brick and lumber, observing that "Newcomers preferred to freeze in winter and stew in summer rather than live in one of those 'ugly mud houses'. The idea of stepping though one's front door into the street was equally repugnant, and in the new residential districts a front yard interposed
a decent interval between residence and road. ...New residents (also) imported the green lawn..." (Sonnichsen, p. 107)

These "new residential districts", additions to the city, were platted on a regular grid pattern, with 50 ft. by 150 ft. lots forming rectangular blocks. The wealthy built on north Main Street: their large houses bringing Eastern architectural styles and materials to the desert setting.

As the business district expanded along Main and Meyer Streets, it displaced Mexican families, who, according to Sonnichsen, were either bought or forced out; they moved southward, concentrating around Church Square, (the old Plaza de la Mesilla). Adjacent to this area, to the north, was Tucson's "sporting district" in the 1890's, occupying a narrow, tapering block called "the Wedge". "The Wedge" provided Tucson with its first opportunity for demolition at the district level: in combination with other street widening (reconfiguration) work, "the Wedge" was razed in 1902.

In the last two decades of the century, additions were made to the urban infrastructure. The privately owned Tucson Water Company began operation in 1882, marking the end of private wells, and a part of the service sector — the water carriers who sold buckets brought from the Santa Cruz in the plazas for 5 cents. The City took control of the water system in 1890, coinciding with work on a sewer system. An 1881 proposal for street cars was not implemented until 1898, when mule-drawn cars went between downtown, the train depot, and the new University. The mules were replaced by electricity in 1906.

The new railroad tracks and depot 1/2 mile from the business center sprouted a district of warehouses and shops. Congress Street developed as a connection between these two areas; as Sonnichsen notes, "it was the first east-west thoroughfare to break the old north-south pattern". (p. 107) This orientation became the dominant pattern for growth in subsequent years.

Reinforcing this eastward trend, and northerly expansion of Anglo residential areas, was the location of the University in 1891. Three businessmen donated 40 acres 1/2 mile northeast of the railroad depot, creating a magnet for new
residential neighborhoods. The first additions to the original 2 square mile
townsite after the turn of the century were in this direction.

As early as the 1880's Tucson began to see tourists and health-seekers, arriving particularly in the winter months. By the turn of the century, this influx had grown tremendously, facilitated by good passenger rail service, and increasing private ownership of the automobile. Tucson actually experienced a housing shortage in the 1890's as tubercular patients camped in tent cities at the edges of town and in the Catalina mountains. (Sonnichsen, p. 141) By 1920, the automobile had replaced the horse as the primary means of transportation, changing the patterns of growth and transformation. Tucson's growth followed the easterly extension of the main streets from downtown, aligned perfectly with the mile-square grid of the Land Survey.
Figure 27. Meyer Street, Tucson, 1880's
Arizona Historical Society

Figure 28. Meyer Street, Tucson, 1896-99
Arizona Historical Society
Figure 29. Plaza de la Mesilla, Tucson, ca.1900
Arizona Historical Society

Figure 30. Plaza de las Armas, Tucson, ca.1880
Arizona Historical Society
Figure 31. Fergusson Map, 1862
Figure 32. plan of Tucson in 1893
COMPARATIVE ANALYSIS

Having presented something of the history of each of the five settlements with the intention of emphasizing their individual character, I will now turn to a more collective analysis based on the hierarchy of levels and processes of transformation outlined at the beginning of the section. Below is a summary of the information in this matrix; these generalizations are drawn from the narrative histories and from examination of the photographs and maps.

| DETAILS | ADDITION of material: door and window moldings, surface veneers (plaster, brick and wood over adobe), and Victorian "gingerbread" trim |
| REPLACEMENT of timber portal posts with dimensioned lumber and later with late-turned decorative posts; in some cases a succession of stylistic detailing |

| BUILDINGS | ADDITION of pitched metal roofs; of second floor in frame or brick construction |
| INFILL of courtyards with new rooms |
| EXTENSION by addition of porches, shed, new rooms. The Hispanic pattern was to add room by room; the Anglo pattern was more often to add a secondary "building" |
| DEMOLITION of rooms, sometimes from lack of maintenance. This was the Hispanic pattern; the Anglo pattern was more often wholesale demolition in preparation for |
| REPLACEMENT of adobe buildings with either new adobe buildings or brick structures |
| RECONFIGURATION within a building to adapt to a new use |

| DISTRICTS | ADDITION of new buildings on "vacant" (previously agricultural) land |
| INFILL through subdivision of larger territories |
| EXTENSION of commercial and residential districts |
| DEMOLITION of buildings and blocks for REPLACEMENT |

| CITY | ADDITION of "New Towns": of infrastructure – sidewalks, electricity, sewers, etc. |
| EXTENSION into adjacent areas – the Hispanic pattern was piecemeal growth; the Anglo town grew through the addition of platted subdivisions. |
| RECONFIGURATION of streets and blocks to widen and straighten irregular parts of the Hispanic environment |
The following discussion, organized by levels, is based on the idea that for any form in this study, there are two "cultural models", Anglo and Hispanic, which then represent a range of "intention". For example, at the building level, if we consider the plan of the house, the range of intention could be depicted like this:

- from an additive, cellular, enclosing form to a symmetrically organized, functionally differentiated "whole".

At the same level, the range of intention for the zone of exchange between building and street is this:

- from a defensive condition of no exchange to an open, multi-layered zone.

At the district level, for the form of demarcation of private territories, the range of intention might be expressed this way:

- from a wall that creates spatial enclosure to an open, visual demarcation.

Since the frontier condition affected the realization of both models in this period, (albeit less so after 1880), and assuming what was extant in 1821 as a starting point, the actual range of transformation is relative to the range of intention; diagrammatically expressed in the following way:
In the same way that the processes of transformation are observable at all levels, this model of cultural "poles" and a range of transformation occurring inbetween is applicable to all sizes. The underlying assumption has to do with the nature of the hierarchical system of levels – that "behavior" of form is consistent regardless of size, and that size is always relative to the human dimension.

DETAILS

Insofar as this level often represents an elaboration of form at larger levels, it is more difficult to establish what either of the "models" would have been due to stylistic variation within relatively short periods of time. In the case of Hispanic forms at this level in the first half of the 19th century, elaborate detailing around doors and windows in neo-Baroque styles was common in Mexico. The 19th century Anglo-American ideal was represented by a succession of revival styles, and there are examples in all of the towns of adobe buildings transformed by the addition of Greek Revival, Queen Anne, Italianate, and Eastlake detailing.

The transformation can be characterized as from an almost complete lack of detailing to an intense elaboration of edges – roof edges, porches, bay windows, balconies, etc. There was, of course, elaboration of some buildings in the Spanish and Mexican periods, primarily of churches. The corbelled wood capitals of portal posts and supports used to extend the span of vigas in large rooms is one example.

The transformation of adobe buildings by the addition of materials at the detail level can be seen in several of the photographs: examples of "Territorial" Greek Revival style detailing are in fig. 27 and 28 of Tucson, fig.
9 of Santa Fe, and fig. 25 of Las Vegas. In fig. 17 of the Plaza in Albuquerque, neo-Gothic details have been added to the adobe church while the adjacent convent has retained its Greek Revival moldings around the doors and windows.

BUILDINGS

In general, buildings in the Hispanic environment are defensive in nature—they act as walls to enclose "exterior" space. The earliest buildings were simple accretions of rooms of similar size, beginning along the edge of the street and then extending back to enclose the placita. A comparison of the earliest two maps of Santa Fe reveals this growth process. The Anglo American model was a reversal of this pattern: a free-standing, completed "object" surrounded by open space, centered on its plot of ground. The individual house, the church, and important public buildings such as the library and courthouse expressed this ideal. If the Anglo American building grew, it was awkwardly, by the addition of subordinate forms such as sheds and lean-to's. J. B. Jackson characterizes the two poles this way: "The basic Anglo American dwelling unit is the house, which we subdivide into rooms; the basic Spanish-American unit is the room which is eventually added to." (1959, p. 31)

The accretional growth process is still operative in some of the Hispanic towns in northern New Mexico, as documented by Kutsche in his anthropological study of Canones, near Abiquiu. As new rooms are added to a house, the old are left to weather and subsequently change use from habitable room to storage shed, to stable, to ruin. Combined with this evolution is the tradition of dividing property equally among heirs. In some instances this means that a single house is in effect transformed into multiple houses by subdivision and with addition of new rooms. (Kutsche, 1981, p. 77)
This process is described in John Russell Bartlett's PERSONAL NARRATIVE of 1854: "The houses of Tucson are all of adobe, and the majority are in a state of ruin. No attention seems to be given to repair; but as soon as a dwelling becomes uninhabitable, it is deserted." (p.296)

Anglo cultural influence changed the pattern of growth of Hispanic buildings from that described above. Tucson in 1862 had few "complete" courtyard forms, and transformations after that point followed a different pattern of growth. The analysis of Sanborn maps between 1883 and 1898 (fig. 38) shows that many of the buildings grew by addition of a second row of rooms behind the first. This pattern is also visible in the roof-top photograph of 1900 (fig. 29), where parapet walls reveal the construction. The Hispanic pattern recognized an alternation of light and open space with built, closed space while still maximizing the amount of enclosed space. The Anglo pattern allowed rooms with no access to light, particularly in the long narrow commercial buildings.

Transformation of courtyard buildings around the plaza in Santa Fe was usually by infill of the placita, subdivision of the building perpendicular to the street, and by extension upward and to the rear. This transformation accommodated the growing economy by concentrating and expanding space for commercial activity and maximizing the number of buildings with street frontage. Transformation of courtyard houses that remained in residential use was less radical; analysis of the Sanborn maps for Santa Fe (fig. 34) shows demolition of individual rooms and one incident of partial infill of the placita.

Albuquerque, Socorro, and Las Vegas were similar to Tucson in that there were fewer "complete" courtyard forms in the town centers at mid-century.
(The exact number is difficult to ascertain because of the lack of detailed maps prior to 1883. There could have been courtyard houses that were replaced, as in Santa Fe, by new commercial buildings, or, more likely, there were more "partial completions" that were subsequently transformed as in Tucson.)

A dimensional study of Santa Fe, (fig. 33), reveals the most common dimensions at the room, building, and district levels. The "room" and "house" dimensions are repeated fairly consistently in all the towns except Tucson, probably because of its origin as an unplanned settlement around the presidio gate. The "house" dimension, a little more than 80 feet, was probably determined by the size of the original "solares", or plots, granted to settlers. There is more variation in the "room" dimension, which is primarily a function of the structural technology of log vigas and dirt roofs. In the Sanborn maps of Albuquerque, for example, the room dimensions are consistently about 18 ft. in the buildings along Morris and Short Streets south of the Plaza, and about 25 ft. in buildings along Main and Santiago Streets to the northwest. Without a more complete record, one can only speculate about the reasons - different age and improved construction, different socio-economic status and resources, etc.

Some commercial buildings are dimensionally the combination of two adobe "rooms", which suggests the possibility that a center wall as demolished and replaced by columns (visible in some places on the Sanborn maps), maintaining the integrity of the overall form. In other cases, where the building material is noted on the Sanborn map as brick, one can assume that the entire building was replaced.

(At a certain point, the investigation becomes archeological in nature, and primary research - access to title transactions and other archival records, on-site verification of construction and materials - is necessary for further interpretation.)

Spanish and Mexican buildings were also transformed by the addition of porches and balconies, and pitched roofs, often simply added to the existing
dirt roof and adobe parapet walls. Figures 25, and 27 show examples of these transformations.

DISTRICTS

The Hispanic idea of the building as a wall is repeated at the district level where a continuous built edge defines the block and the street. The original intention of the Laws of the Indies, a square block with houses facing in all four directions, was not realized in full in any of the frontier settlements. The Anglo American ideal is again a reversal of this pattern. The residential block is a rationally-demarcated surface with buildings as discrete objects placed in the center of its subdivisions – a simple multiplication of form at the lower level. The commercial block has the same structure, but the building occupies the whole surface. The clearest example of the juxtaposition of these two patterns is in the infill of the old military ground northwest of the Plaza in Santa, seen in the Hartmann map of 1886 (fig. 13).

None of the settlements achieved a recognizable, repeated block pattern comparable to the Laws of the Indies model during the Spanish or Mexican periods. Most blocks in these towns have a directional orientation – the only "omni-directional" space is the Plaza. Tucson had a few blocks with buildings facing all four streets, specifically near the old Plaza de la Mesilla. In Santa Fe, the block on the south side of San Francisco Street had only one "front" until the turn of the century. This block was originally bounded on the south side by an acequia, visible in the Gilmer map of 1846 (fig. 12), which served gardens at the back of the houses fronting on San Francisco Street.

In general, blocks in the Hispanic environment tended to be open at the interior, land behind the house originally being used for subsistence agriculture.
Individual lots were defined by walls and sheds. The Hispanic pattern of transformation was an intensification of the street edge; the courtyard would be enclosed, and rooms added contiguous with the house. The Anglo pattern of transformation was infill of the block’s interior, through subdivision of the land into narrow parcels, requiring extension of the building deep into the block.

In the analysis of transformations between 1883 and 1898 in Santa Fe (fig. 34), one can observe the commercial pressure on the courtyard houses along San Francisco Street to the west of the Plaza. It is probably reasonable to assume that this process was similar to what happened in the area immediately adjacent to the Plaza between 1846 and 1883. The transformations are mostly of a piecemeal nature; the district was being "dismantled" in much the same way as it was built up between 1776 and 1846; little in the way of wholesale demolition, more in the way of piecemeal subtraction. The overall pressure on this district is visible in the increasing density of built space toward the plaza in the 1900 photograph of San Francisco Street (fig. 5).

Barrio Analco, south of the river, was the original settlement of the Tlaxcalan servants accompanying the Onate Expedition of 1609. The barrio’s linear form is ordered by the acequia, a pattern common to the smaller settlements of later periods. (Conway, p. 16) The chapel of San Miguel was built to serve as the mission church. In the Revolt of 1680, Barrio Analco was the first area sacked by the Pueblo Indians; it was rebuilt after the reconquest in 1693, and by 1776 it was inhabited by married soldiers, genizaro servants and other laborers. Some of the extant buildings today date from before 1776, and the barrio has retained its cohesive form, making it a distinguishable district within the city. (Historic Santa Fe Foundation, p. 42)

Regarding "infill" of the plaza between 1776 and 1862: a pattern of encroachment began early; the group of buildings in the plaza on the 1776 map points the way to the completion of the block by 1862. In the 1740’s, Governor Cruzat y Gongora "bought a house in order to demolish it because it obstructed the entrance to the parish church". In 1756, "Governor Marin del Valle ordered certain citizens to open the streets upon which they had
encroached with fences and buildings, especially ‘in front of the house of this royal presidio’”. (Historic Santa Fe Foundation, p. 17)

It would seem that private appropriation of common/public ground was frequent. One author (Simmons, 1982) has commented that Anglo descriptions of the irregularity of Hispanic towns was due to a preoccupation with precise lines and measurements. The Laws of the Indies called for the demarcation of public spaces first, with private lots falling inside their boundaries; given the irregularity of street patterns in these towns, they seem to have more in common with the medieval and Islamic traditions of public spaces being "left over" from the physical definition of private territories. These patterns were present in 16th century Spain, and may have been brought to the New World in the experience of the settlers, frontier conditions making strict enforcement of the Laws of the Indies difficult.

CITY

The Laws of the Indies model of the city was a center-generated, place-making form. The process of founding and laying out the city began with and emanated from the Plaza (literally, "place"). The planned Anglo-American City of the 19th century grew out of a subdivision of the larger grid of the 1785 Land Ordinance. Combined with the railroads, it resulted in a line-generated form emphasizing movement. The Anglo conception of the city did not include the built form, only the surface structure and organization. By contrast, the Laws of the Indies prescribed both form and structure.

Tucson is something of an exception to this generalization of the Hispanic pattern because the "origin" of the plan form was not a plaza, but the presidio, or more precisely, its entrance.
The Spanish townscape was transformed by the Anglo ideal through addition of districts; i.e. extension, and by creation of "New Town"s. The direction of growth after 1880 was determined largely by the location of the railroad relative to the business center of the town. The orientation of the structure of the town, however, was not always affected by the railroad tracks. In Albuquerque, the fervent efforts of the town's businessmen to attract the railroad is expressed in the alignment of streets in New Town with the tracks, several degrees off of the cardinal points. Tucson's street grid ignored the railroad's orientation, which came through on the diagonal.

D.W. Meinig characterizes the Old and New Towns of Albuquerque and Las Vegas by 1900 as "two parts of a whole, Hispano and Anglo, separate social communities bound into an economic entity". (p. 48) In addition to these two towns, Meinig names Socorro and Tucson as dual towns; I have found some further distinction useful. While there was some spatial separation in all of these cases, (varying from 3/8 mile in Tucson to 1 1/2 miles in Albuquerque), only in Las Vegas and Albuquerque was there the intention of creating a new town. In Tucson and Socorro, the old business district simply grew toward the new district of warehouses near the depot, in a process of infill.

The distance between the business center and the railroad depot in Tucson was filled before the turn of the century, even though there was some initial resistance to location of businesses so "far" from Main Street. The north and east directions of extension established during this period have continued to the present; Speedway and Broadway Boulevards stretching for 12 miles across the desert to the Tanque Verde Mountains forming the eastern edge of the Tucson basin. (fig. 41)

Socorro's depot was a little less than a mile from the plaza. A continuous business district was never achieved because of the decline in mining activity and population in 1895. When the next period of growth began after the turn of the century, it was brought by the automobile, and the new coast-to-coast highway that came through town on California Street kept business closer to the plaza.
The exception to the pattern of dual railroad towns in the Southwest was Santa Fe, where the railroad arrived only as a spur line from Galisteo to a point southwest of the town. As the growth map of the town (fig. 39) shows, extension continued along the east/west axis of the river and acequias, not beginning its southerly expansion until the middle of this century.

The period of growth that followed the establishment of New Town in Albuquerque took two directions. (fig. 40) One was along the road to Carnue, the extension of Railroad Avenue, which later became Route 66. The other direction was parallel to the railroad tracks.

**LANDSCAPE**

The two grids share the intention of rationality inherent in orthogonal relationships. The Spanish grid, like its precedents in the Roman Empire, has the intention of making place in the landscape; the Anglo American grid of the 1785 Land Ordinance sought to rationalize the surface of the West. The Laws of the Indies town emanated from a place carefully chosen for its life-sustaining qualities - moderate climate, good source of water, dry ground, healthful air, etc. It was not uncommon for new American towns to be platted starting from the intersection of two section or township lines.

Additions to the Hispanic towns were, sooner or later, "justified" to the larger American grid. In Tucson, this happened when the town was first incorporated in 1872. The original townsite was two sections that included almost all of the hispanic settlement. (fig. 41) This unrelenting mile-square grid continues to structure additions to the city within the topographical confines of the Catalina, Tucson, and Tanque Verde mountains. Albuquerque's street pattern was aligned with the survey grid as the town grew eastward from the railroad.
tracks and up from the basin of the Rio Grande. It is only in recent years that the growth of Santa Fe has assumed this structure. Additions to the city through the 1950's continued to be influenced by old agricultural patterns and roads to and from the city.
Each mark represents one occurrence of that dimension on Fig. 34. All dimensions are registered off of the right-hand edge.

Figure 33. Dimensional study of Santa Fe
Figure 34. transformations, Santa Fe, 1883-98
Figure 35. Transformations, Albuquerque, 1891-98
Figure 36. Transformations, Socorro, 1883-98
Figure 37. transformations, Las Vegas, 1883-98
Figure 38. Transformations, Tucson, 1883-1901
Figure 39. Growth of Santa Fe after Williams and McAllister
Figure 40. growth of Albuquerque after Williams and McAllister
Figure 41. growth of Tucson after Bufkin
SUMMARY AND CONCLUSIONS

During the period encompassed by this study, the character of the frontier settlement in the Southwest changed from a static outpost to an intermediate point through which people and resources moved, as the edge of the frontier was pushed further outward from its center. Increased contact through trade and immigration meant more exposure of the frontier to the ideas and material artifacts of its cultural center, which was expressed in transformation of the physical environment. The Spanish period in the Southwest, from 1598 to 1821, was characterized by extreme isolation — official trading expeditions from Ciudad Mexico and Chihuahua came only once every three years. The two and one half decades of Mexican administration (1821 – 1848), comprising the first phase of this study, saw some increase in trade and communication, the Santa Fe Trail forming a conduit of economic and cultural exchange between Independence, Missouri and Ciudad Chihuahua. By mid-century, the beginning of the second phase, economic ties with the United States dominated the region. From the signing of the Treaty of Guadalupe Hidalgo in 1848 until completion of the railroads in 1880, economic growth in the region was due to the presence of military and Indian Agency establishments. This was the first strong incentive for urban development — the location of forts such as Marcy at Santa Fe and Lowell at Tucson created a concentrated market for goods and services. After 1880, the railroads affected the magnitude of this growth — the new transportation technology brought people and goods to the region at a rate several times that allowed by the wagon trains, and allowed the export of resources such as timber and ores, and livestock to eastern markets.

Urbanization and increasing complexity of the economy translated into a diversification of building types. Initially, residential complexes served all functions; one or more rooms in the house would be used for commercial activity or crafts production. The Buckley House in Tucson, which functioned as a hotel, restaurant, stables, and warehouse is a more complex example. "Specialization" of building types and functions mirrored the process of distinction of discrete sectors of the developing economy. For example, the establishment of military posts at Tucson, Albuquerque and Santa Fe resulted in the first flour mills and saloons. "Specialization" was not limited to the
building level, but occurred at the district level as well, as separate residential, commercial, and warehouse zones were created in the larger towns.

The general process of urbanization of the Southwest paralleled transformation of the Hispanic physical environment. Urbanization was fueled primarily by American economic and political expansion, and the Hispanic towns of the Southwest were transformed in the image of the eastern half of the United States. Consistent with increasing cultural contact between the frontier and the center, the pace and magnitude of change increased from 1821 until the end of the century.

A diagram that characterizes the general transformation in terms of continuity and discontinuity according to level looks like this:

<table>
<thead>
<tr>
<th>Year</th>
<th>Details</th>
<th>Buildings</th>
<th>District</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>1821</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1840</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1880</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This pattern can be discussed in terms of the tension between continuity of place and continuity of culture at the meeting point of two cultural frontiers. Continuity of place is the case for all levels through the first period, and is generally the condition at all levels except "details" until 1880. There is continuity of place until the resources (money and technology) are available to transform the physical environment, and until there is a sufficient collective socio-cultural "force" to support change.

Continuity of culture is, for obvious reasons, the stronger impulse, or intention. In organized colonization of a new land, settlers do not willingly jettison their culture in preference for another, particularly if theirs is more highly developed. Settlers bring as much "cultural baggage" as resources, distance and technology allow. The Laws of the Indies is an example of this. In addition to its obvious administrative role, the Codice was an expedient way, given the distances and transportation technology involved, of transferring culture.
It is consistent with this idea that the "details" level of the environment was the first condition of discontinuity of place, and that there was a general progression in time from "details" to "city". In addition to the question of available resources, the fact that Anglo settlement in New Mexico was not regulated as it was in Texas by the system of empressario grants that enabled foreigners to settle whole colonies, meant that Anglos in New Mexico purchased land and buildings, piecemeal, directly from Mexicans or simply occupied undeveloped land. In any case, they did not settle in spatially-defined enclaves, nor did they seek to radically alter their environment; they were assimilated into the dominant culture. It was only after the population had grown sufficiently to warrant additions to the town that such spatial definition of culture began to occur.

Prior to 1880, there were few transformations at higher levels; There were some new buildings constructed more on the Anglo plan models, but in the only available material – adobe. In Santa Fe, the district around the plaza underwent this sort of change, as new commercial buildings replaced courtyard houses. In Tucson, changes in the commercial area were more discrete – some Anglo commercial establishments such at the Zeckendorff buildings on Congress and Main were inserted into the adobe fabric. As in Albuquerque, though, transformations at the district level waited until completion of the railroads.

There was also an attitude of "disguise" that guided transformation at the detail and building levels prior to arrival of the railroads, and continued after 1880 when sufficient resources for larger interventions were not available. This differed from the simple addition of details (door and window moldings, Victorian gingerbread trim, etc.) to adobe buildings, which can be considered as elaboration, or from the addition of practical elements such as brick parapet coping or metal roofing; it was a literal attempt to hide the Hispanic character of the building through addition of wood or brick veneer, or a coating of lime plaster painted to look like brick.

1880 marks an abrupt change to discontinuity of place at the larger levels. The increase in the magnitude of immigration combined with the sudden availability of building materials from the East meant that continuity of
Anglo culture became the dominant force of transformation. Inherent in this condition, however, was a sort of reciprocal maintainence of continuity of place: new districts and "New Town"s allowed preservation of the old. Albuquerque's New Town meant that the area around the old Plaza would not be subject to the pressures of commercial growth that would surely have resulted in replacement of most or all of the adobe buildings. Similarly, the plaza districts in Las Vegas and Socorro underwent a more gradual transformation process that retained the Hispanic structure and some of the original form.

In Santa Fe, where the railroad reached the edge of town only as a branch line, the Plaza remained the center of business activity, and many of the individual buildings were transformed or replaced to maintain Anglo cultural continuity. Tucson's business district grew toward the railroad tracks, but maintained a center of gravity near the intersection of Main and Congress Streets, meaning eventual replacement of most of the buildings from the Hispanic period, and, in the middle of the 20th century, restructuring at the district level.

To carry this discussion into the realm of design, we must consider intention and attitude. Continuity of form in the face of some intervening action implies that the existing form has "present value". (Continuity due to inaction - for lack of resources or interest - is a separate discussion.) Conversely, if the existing form is not valued, the intervention may be to destroy and replace it. There is, therefore a range of possible actions of increasing discontinuity:

At each level, for each move, there is a range of transformation which progresses further and further away from the existing condition. Continuity is a matter of how far along that range one can move before the form is no longer recognizably associated with the previous state. Put in cultural terms, it is the extent to which an environment can be transformed before the inhabitants can no longer recognize themselves in the built form. This condition is the same at each level. Sufficient transformation of the structure
of the city that is inconsistent with the culture of its inhabitants will make it alienating; enough transformation of the form of the house will affect the relationships among its inhabitants; enough transformation in a neighborhood will challenge the collective social structure.

In the context of this discussion of the extent of transformation, the distinction between structure and form is important. In an article on the historic structure of Santa Fe, planner Harry Moul makes the following statement: "Structure, whether the original block forms surrounding the Plaza, the major trails leading to the city, or the early patterns set by irrigated agriculture, tends to be surprisingly enduring. No matter that individual buildings surrounding the Plaza have been replaced several times over - the intent of the original plan is still evident." (City of Santa Fe, p.3).

Is continuity of structure enough to maintain a sense of place over time? I think not - continuity of form, which has implications for materials and construction, is as much an expression of cultural identity as the structure. The extreme example of Moul's statement would be replacement of all of the adobe buildings around the Plaza with Victorian "commercial palaces", which in fact was the intention of the Anglo-American urban frontier, and was carried out in Las Vegas. (figs. 23, 24) The resulting environment would maintain the clarity of orientation and movement, but would certainly be less recognizable as a place tied to culture. The reverse is also true: it is not enough to maintain continuity of form without the structure. This attitude has produced acres of frame and stucco "adobes" on suburban lots.

The belief that continuity in the built environment has positive value is itself culturally-embedded in the 20th century. The Anglo Americans arriving in the Southwest in 1880 held the reverse to be true, an attitude evident in their writings and speeches. They sought to change the Hispanic environment in the image of their home towns. They sought a continuity of culture - to recreate, perhaps even more emphatically than in the original, the structure and form of Eastern cities.

"Historic preservation" is the narrow view of this issue of continuity; in its strictest interpretation, it does not allow transformation at all but seeks stasis
in discrete fragments of the built environment: a house, a landmark, a monument — the boundaries of which are clearly delineated. The recent history of the preservation movement entails the necessary broadening of this original understanding to include historic districts, and the hard edge of what is to be preserved has been softened by such concepts as that of facade easements.

In the Southwest, temporal continuity of the Hispanic environment is justified by its "present value", not only to the large percentage of the population that is Hispanic, but for its role in contributing to a sense of regional history. It is not a simple matter of maintaining some symbolic reference to a distant and foreign past that has current meaning only as a marketable commodity. The pastiche of stucco and tile that results is only a thin veneer of disguise for form and structure far removed from its reference — not unlike the disguise of painting brick patterns on an adobe wall.

A deeper understanding the attributes of form and the process of transformation in the hierarchy of levels allows interventions to be made in the present that will extend the continuity of the Hispanic past beyond the immediate boundaries of the historic districts of Old Town in Albuquerque, the Plaza in Santa Fe and the barrios in Tucson.

Certainly not all of the attributes of the historic environment are desirable; in any case, architectural and urban design are inextricably tied to the present — technologically in terms of construction and materials, functionally in terms of lifestyles and usage, and culturally.

Certain attributes, however, are of value in the present. One is the alternation of light/open and built space inherant in the courtyard house type. Another is the hierarchy of open space from the public plaza and street, to the semi-public portal, to the private, but still collective placita. The repetition of a concept at several levels of the environment — the placita, plazuela, plaza in the city, and the plaza town — is a strong current of continuity within the environment. The zone of exchange between building and open space, both on the street and surrounding the placita, is another
such attribute. The repetitive cellular form of the Hispanic building lends itself to growth and change more readily than the centralized Anglo forms.

Design in the present should seek to reinforce these positive attributes, repeating and transforming them as necessary to accommodate and express the present, while maintaining our recognition of the original forms.

As a way of summing up this study, I would like to return to the reference provided by Chihuahua. The idea of looking across the border to compare the separate evolution of settlement forms from a common beginning belongs to J. B. Jackson; the title of his 1959 essay, "Chihuahua, as we might have been", could be a subtitle for this thesis.

"Here then is an environment in every important aspect like our own rangeland — in climate, vegetation, water supply, topography — where nevertheless a totally different kind of human landscape prevails...There has in fact evolved to the south of us a landscape of towns and cities, a surprisingly rich and numerous constellation of communities located as it were in a void...The smaller towns are a gridiron of low houses bordering dusty and windswept streets, streets too broad and too long, and with the harsh mountains or the desert at the end of them, no matter what their length....These towns have a character very much their own: detached from the countryside, self-contained, and within limits remarkably urban." (1951, p. 22)

Jackson was describing the contained nature of the Hispanic town, a quality that permeates all levels of the environment. The town has no exchange with the landscape, the building has no exchange with the street, even the room has no exchange with the building. This attribute is defensive in nature. The Anglo environment, on the other hand, is open — the city sprawls out into the countryside, the buildings are surrounded by open space: there are multiple-layered zones of exchange at all levels of the environment.

Each of these environments has its positive and negative qualities in the late 20th century. Certainly there is no rationale to support such a defensive form of building in the present as the plaza town; yet in the broad open landscape of the desert Southwest, the dissolution of city into suburb is wanting in definition. Given the aridity and harsh climate of the region, a more desirable urban form would combine an oasis pattern of settlement such as Jackson describes in Chihuahua, with patterns of exchange that are open yet defined, at the district and building levels.
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