OLD AS THE HILLS

by

Robin H. McCaffrey

B.Arch, Texas A&M University
(1970)

Janet Needham-McCaffrey

B.F.A., University of Texas, Austin
(1969)

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
DEGREES OF

MASTER OF CITY PLANNING

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

FEBRUARY, 1978

Signature of the Author _____
Department of Urban Studies and Planning,

Signature of the Author _____
Department of Urban Studies and Planning,

Certified by _____
Thomas E. Nutt-Powell, Assistant Professor of Urban and Regional Planning, Thesis Supervisor

Accepted by _____
Chairman, Department Committee on Graduate Students

OLD AS THE HILLS

by

Robin H. McCaffrey Janet Needham-McCaffrey

Submitted to the Department of Urban Studies and Planning on January 20, 1978 in partial fulfillment of the requirements for the Degree of Master of City Planning

ABSTRACT

Historic Preservation is concerned with both continuity and differentiation. Efforts to realize these two goals, constrained by legal realities, face a dilemma. Emphasizing continuity often leads to homogeneity, while emphasizing differentiation frequently results in preserving superficialities of style and fad. Adequate response to the dilemma attends to those factors which contribute to a settlement's continuing vitality by highlighting its distinctiveness. This thesis presents as a structural theme a landscape relationship theory as a sound basis for historic preservation, one which also places preservation efforts into the mainstream of prescriptive planning.

The structural theme has three attributes:

1. Continuity over space. The built environment is part of a larger physical reality regardless of cultural variation within it.
2. Continuity through time. The built environment exhibits qualities which are continually observed over time despite transient physical changes.
3. Differentiation. The built environment will vary from one place to another in appearance, scale, siting and so on.

The language expressing the structural theme has both conceptual and structural elements. Conceptual relationships are parallel associations between the built and natural environment not necessitated by natural phenomena. Structural relationships are the direct result of a physical interface between built and natural environments.

To investigate the structural theme, a study area in Northern New Mexico was selected. Seven Indian and eight Hispanic communities were studied to establish an initial vocabulary which meets the test of cross-cultural applicability. Santa Fe, a community with Indian, Hispanic and Anglo influence, was studied at six points in time from 1768 to 1930 to assess the viability of the vocabulary regarding the test of temporal continuity. Finally Whiterock, an Anglo community initially developed in 1961 to house workers at Los Alamos Scientific Labratories, was studied to determine the usefulness of the vocabulary in assessing distinctiveness.

The methodology of the study is carefully documented. New field techniques, including the sacred circle map, viewer dial, and landscape/builtscape symbols for mapping notation, were developed. All data were subjected to rigorous analysis for spatial and temporal continuity as well as evidence of differentiation.

Three hundred forty relationships yielded a testable vocabulary of sixty-three landscape linkage terms, fifty-one of which met the cross-cultural test. The temporal continuity test applied to Santa Fe yielded a scale of relative stability showing that builtscape and stylistic variables are unstabilizing while conceptual variables are stabilizing. Here planning and preservation decisions made on the basis of structural variables (builtscape or style) see the landscape as a constraint rather than a compelling force. The differentiation test for Whiterock reinforces the utility of the vocabulary and methodology in describing not only unique aspects of the settlement but also the landscape resonance it shares with Hispanic and Indian settlements in the study area. Finally the thesis identifies areas for further study to determine the generalizability of the approach.

Thesis Supervisor: Thomas E. Nutt-Powell
Assistant Professor of Urban and Regional Planning

old as the hills

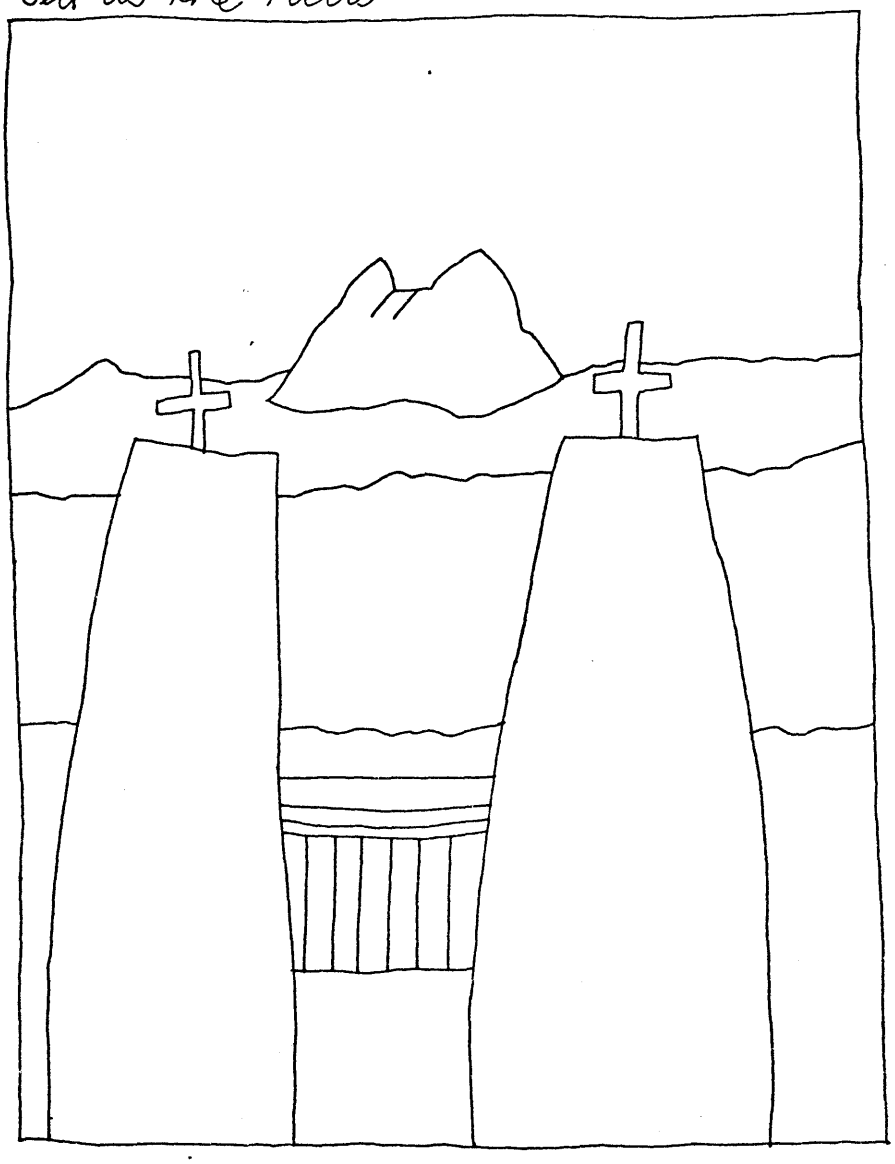


TABLE OF CONTENTS

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

We would like to thank all the people whose help in completing this thesis was a necessary and valuable contribution:

Thomas E. Nutt-Powell (Thesis Advisor) for his insightful/gentle criticism, guiding advice, encouragement, and willingness to be always available.

Richard B. Oliver and Tunney Lee (Thesis Readers) for their enthusiasm and valuable criticism.

Debra Fagin for her willingness to give of her own valuable time.

Karen Hillier for sharing her knowledge of New Mexico and helping to make a summer in the field possible.

Alcira Kreimer for her comments and enthusiasm.

Robert K. Yin for his comments and advice during data analysis.

Rudy Sanchez and Mr. Lawless of the New Mexico State Highway Department for their assistance in making field maps.

Richard Rudicil and Arthur Olivas of the Museum of New Mexico Photographic Archives for their assistance in tracking down old photographs of Santa Fe.

Judy Geitgey of the University of New Mexico (Albuquerque) Map Archives for her help in making arrangements to use archival resources.

The Anthropology Laboratory of the Museum of New Mexico for allowing us to use and copy materials from their library.

The Santa Fe Planning Department for availing their resources to us.

PREFACE

PREFACE

Like most Southwestern cities, Dallas was radically changed by the railroad's arrival in 1872. What had been a settlement along wagon roads from Austin and Houston was now a city at the end of the line from New York and Chicago. Imported along these lines were not only people and business but also architectural styles which had become fashionable in East/West coast market centers. Thus, speculators, endeavoring to make the city marketable, recreated on the frontier, architectural settings which had become familier in other cities. Qualities of the good life, too expensive for those back home, became affordable out West and thus were part of (basic to) the growth of Dallas. The Dallas Swiss Avenue Historic District is a good example of this. In about nine city blocks exists a conpendium of architectural styles, popular during the railroad era.

That Swiss Avenue was the first historic landmark to be designated under the Dallas Historic program, illustrates a concern of this thesis -- preservation of architectural style does not mean preservation of what is unique to a settlement. If style alone is important, then preservation of representative architectural examples is sufficient. Yet we seek to preserve two, three entire districts and ultimately entire towns. It would almost seem that we somehow realize that an attitudinal bias towards style fails as a tool for communicating a community's individual identity.

If the architectural style of much of Dallas is, in an historic sense, transported from other urban centers; then what about it is uniquely Dallas? Is there an intuitively more appropriate structural theme for a preservation program then architectural style? An historic program based on architectural style seems unresponsive to those more subtle and unique qualities which characterize a city. In Dallas, for example, some neighborhoods were seemingly an integral part of the city -- such as the first Mexican-American community -- yet could not meet the historic district designation criteria of the Dallas ordinance.

What was missing from the program was a rationale for preservation decision which is rooted in a fundamental dynamic responsible for the city's built form instead of limited to an evaluation of an area's conformance to a typology of architectural expression. In 1974, while working as Urban Designers for the City of Dallas (1970 - 1976), we were involved in a project to document the city's visual form and during this investigation, we observed that subnetworks of form qualities existed only in the presence of certain landscape phenomena. In the project report, we called this the "hidden diversity of Dallas." [1] As a result of our observations, we came to beleive that a more appropriate structural theme for the city's preservation program would root in the dynamic of landscape relationship. That is, the linkages between both the man-made and natural

---

1. The Dallas Department of Urban Planning, The Visual Form of Dallas, published under grant from The United States Department of Housing And Urban Development, project# CPA-TX-06-16-1056, 1974

environment. Selection of what is preservable (historically) would be enhanced by a better understanding of the resonance which exists between people who built/build Dallas and the landscape they embrace. This, we feel is the essential force which makes Dallas uniquely Dallas.

We found that others share our belief:

> "What gives the architecture of New Mexico (...) its particular quality is not is resemblance to more correct prototypes (style) but the site, the relationship to environment, the psychological functioning in the community of its examples." [1]

Therefore, our intent in this thesis is to look closely and systematically at what has been heretofore only an idea with us and other writers -- namely a relationship between landscape and the built environment.

Further, it is our desire that formulation of this notion as a clear and workable structural theme will help those working in historic preservation to confront conceptual and operational weaknesses in the field. It is also our desire that this thesis will help us to understand our environments better and in so doing formulate more responsive solutions to current problems.

---

1. Conway, A.W., Landscape, Vol 1, No. 1, 1951, p. 30.

INTRODUCTION

The rhetoric employed to justify most historic preservation or neighborhood conservation efforts, [1] cites the recognition of difference between one place and another as essential to public health and welfare. Further, this difference is seen, in very general terms, as being an externalization of a largely indescribable continuity bewteen past and present. Thus, the goals of differentiation and continuity are well documented and politically mandated via conservation/preservation legislation and a physiognomical relationship between the two is generally recognized:

> Be it enacted by the legislature of the state of Minnesota ... the legislature finds: ... (1) that with rising income and education, the citizens of the city are demanding a higher quality of environment which is neither chaotic nor sterile; which is diverse yet related, which reflects the geography and history of the area, thus providing a sense of identity for the community; therefore, it is in the interest of the state as a whole that every effort be made to create such a quality environment. [2]

> The purposes of this article are to promote ... the general welfare of the city of Savannah by preserving and protecting the old historic or architecturally worthy structures, sites, monuments, streetscapes, squares and neighborhoods and the unique character of the said Historic Area which impart distinctiveness to the city of Savannah ... The purpose is to develop the Historic Area not as a museum but as a vital living area in which each succeeding generation may build with the quality and sensitivity of past generations. [3]

---

1. A working definition for preservation/conservation efforts: actions on the part of public, semi-public, and/or private interests to recognize unique identity and/or formative history (as manifest in the architectural fabric) via political, legal, financial, and/or educational functions designed to prevent demolition and deterioration (as well as promote active use/reuse) of architectural heritage regarded as significant.
2. Minneapolis State Statute, S.F. No. 2144, Chapter 551, May 26, 1971.
3. Historic Area Regulations for Savannah Georgia Section1, MIS, December 1969, Vol. 1, MO.LS 12, p. 16.

> The City Council (Dallas) hereby finds and declares as a matter of policy that the protection, enhancement, preservation, and use of historic landmarks ... is required in the interest of the culture, prosperity, education, and welfare of the people. The purposes of this chapter are: (a) to protect, enhance, and perpetuate historic landmarks which represent or reflect distinctive and important elements of the city's cultural, social, political, economic archeological and architectural history; (b) safeguard the city's historic and cultural heritage as embodied and reflected in such landmarks... [1]

> If the preservation movement is to be successful, it must go beyond saving bricks and mortar. It must go beyond saving occasional historic houses and opening museums. It must be more than a cult of antiquarians. It must do more than revere a few precious national shrines. It must attempt to give a sense of orientation to our society, using structures and objects of the past to establish values of time and place ... " [2]

However, the legislation which grows out of this rhetoric, while recognizing difference (distinctiveness) in the statement of purpose, actually endorses sameness in its effect. The law is inherently conservative and regulations, unlike the statement of purpose, are built upon exclusion of incompatability rather than inclusion of difference. Preservation/conservation legislation establishes standards and guidelines which, in turn, institutionalize the methodology out of which those standards/guidelines are formulated -- namely the documented recurrance of characteristics within an area's built fabric. Repetition becomes the basis for defining preservable aspects of an area's physical form. While this approach permits uniform application of the law, it also encourages homogenity and insensitivity to unique

---

1. Dallas City Ordinance, No. 14012 -- March 12, 1973.
2. Report of the Special Committee on Historic Preservation, U.S. Conference of Mayors, 1966.

and important differences. Typically, as the result of survey and analysis, a set of readily identifiable and repetitive visual themes are translated into legal definitions of compatability. Therefore, the legal means of defining the extent of regulation tends to preclude more than a superficial comprehension of difference. This superficiality is further encouraged by the legislative process itself which necessitates concensus with regard to what can be legally regulated. By focusing on repetitive and pervasive appearances (style, artifacts, etc.), this resulting superficiality precludes underlying processes responsible for those appearances from being incorporated into the legal instrument.

Finally, the means of defining compatability is limited to a generally accepted (and therefore narrow) vocabulary of neighborhood and architectural components which are recognized as common to all human settlement (for example, height, width, setback, and so on). Thus, the capability to describe unique differences is further compromized by a language of commonality.

The comprehension of difference in terms of sameness is not the result of an insensitivity on the part of those who support preservation/conservation efforts, but a consequence of the legal constraints within which goals must be accomplished. The law, in seeking to avoid capriciousness, often takes refuge in quantitative measures. Measurement as a concept presupposes transferability, thus necessitating identification of commonalities among those things to be measured. As a result, quantitative measure presupposes the

reduction of reality to metric variables. To effect regulation, spatial and architectural components of the built fabric become quantifiable entities while qualitative attributes of the built fabric (often the essence of unique character) elude objective description. Consequently, they are discarded as irrelevant to preservation regulations.

Continuity, a second goal of preservation/conservation efforts, also encounters an unusual counter effect as a result of the above legal standard by which difference is defined. The legal objective of avoiding capriciousness, achieved by preventing incompatability, tends to isolate an area from the forces of change. That is, preventing incompatability militates against the evolutionary processes of change which characterize the general urban fabric (for example, changes in material, architectural style, use, siting, scale, and so on). As a consequence, an area is largely suspended in time and removed from the ongoing stream of past/present/future. In short, the continuity of an area with its own history is broken. Further, the previously described concensus, required in the legislative process, means that what is publically supported as preservable is limited to a time-fixed/culture bound aesthetic preference. This forces repetition of an historic moment rather than building upon it and its sources.

In its best sense, the idea of continuity suggests a sensitivity to the process of change -- an unbroken and dynamic link with the past, through the present, and into the future. Thus, the relationship between differentiation and continuity, as implied by seeking these

goals jointly and simultaneously, is physiognomical. Differentiation is seen in the diverse manifestations of a more fundamental process (an underlying dynamic) -- a process which is stable over long periods of time. This process is continuity. Thus, continuity is the counter principle to differentiation -- continuity supplies the basis in which difference is revealed. Understanding difference also leads the observer to an understanding of continuity.

The ordinance which designates the Dallas Swiss Avenue Historic District recognizes the above described differentiation/ continuity relationship and has acheived national recognition for making some headway toward legally expressing it. Although the ordinance follows the traditional pattern of identifying pervasive visual themes within the Swiss Avenue Historic District, it allows the definition of these themes to vary from block to block. There are twelve themes relating to qualities of the block, qualities of building form, qualities of building treatment, and qualities of facade accentuation. The concept of each theme is described in the ordinance text while the visual manifestation of each theme (the conditions of acceptable compliance) are described by conditions unique to each block within the district. The ordinance simply provides instruction on how to identify the conditions as they exist in each block. Thus, the ordinance states:

> "A structure shall be considered to have met a criterion when, as determined by the Historic Landmark Preservation Committee, it is substantially consistent with structures within the same block of the subdistrict." 1

---

1. Dallas City Ordinance, No. 14247 -- September 10, 1973

differences within a district can be recognized to some limited extent while also maintaining a more general level of harmony. Further unique interpretation of individual instances is permitted by the use of a flexible grading system in evaluating compliance with conditions of the ordinance. Eight of a possible twelve points are required for compliance, with certain conditions regarding distribution of the eight points. As a result, certain trade-offs can be made within the system without interrupting essential visual identity with the district. In this way, natural change can be accomodated to some extent -- thereby responding to continuity.

The Swiss Avenue Ordinance endeavors to permit and encourage variation at a block and site level though its legal language is limited to pervasive district commonalities. As such, the ordinance has not broken away from comprehension of the district in terms of repetition and recurrance. As it has only manipulated the terms, via a flexible framework of evaluation, it stands somewhere beyond specific standards and guidelines but somewhere short of preformance criteria.

Performance criteria are, to some extent, another response to the earlier described dilemma. In use they are only partially successful and then only in situations where a sophisticated means of calibrating compliance is available (for example, air pollution). It is questionable whether performance criteria, as a preservation tool, do more than describe "difference" in terms of more general

standards and guidelines rather than a more enlightened insight. Analysis of difference is still limited to repeated qualities within an area's character, and these qualities are expressed as desired levels of compliance (performance criteria) rather than minimal levels of acceptability (standards). Thus, only the means of regulation is changed not the means of comprehension. As with the Swiss Avenue Ordinance, performance criteria have not broken away from comprehension of an area in terms of repetition and recurrance. They are only another manipulation of the legal language. In addition the issue of continuity is still not addressed as the basis of selecting what is preservable is still a culturally and chronologically fixed aesthetic preference.

What is needed (and that manipulation of the legal language does not give) is to look at things at a different scale and thereby to see different factors at work in the built environment. This different level of comprehension would resolve the differentiation/continuity dilemma as it would allow us to observe simultaneously the built form (differentiation) and the underlying, unchanging dynamic (continuity) which shaped that form. This is what is meant by the physiognomical relationship between these two preservation goals.

In summary, the differentiation/continuity dilemma is the tension between identifying what is distinctive (differentiation) in a way that conveys what is continually vital (continuity). This tension

is the result of two operational conditions which impinge upon our seeking these goals:

1. The legal necessity of describing difference in a non-capricious manner and the legislative process necessity of building concensus around what is to be preserved.

2. The operational bias toward style or artifact preservation.

For the work of this thesis to be useful to the preservation effort, it must be relevant to the legal mechanisms through which preservation is implemented. Therefore, we accept the first condition as a given and the previously described conceptual/methodological mechanisms it imposes. Also, it is our feeling that the second condition rather than the first engenders insensitivity to the needed and different level of comprehension earlier described. As a result, we challenge the second condition (bias toward style) with our own landscape relationship theory. In the subsequent text, we will demonstrate that a landscape relationship approach permits a simultaneous description of difference and recognition of continuity and thus provides a responsive basis for preservation actions.

A Different Level of Comprehension

Given that the differentiation/continuity dilemma is a result of the two operational conditions previously described, a seemingly logical way out of it is to simply expand the stylistic focus and include a larger number of environmental considerations. Thus, working within the given legal reality, one would endeavor to identify the

orderly occurance of a wide variety of environmental phenomena and venture into the areas of urban form. However, whether one selects features of style or urban form as the focus of preservation, means little with regard to the differentiation/continuity dilemma because the basis of that selection (without an underlying dynamic to reference) is still repetition -- orderly occurance. As described earlier, this militates against the objective of continuity as order is imposed on reality by our time-fixed and culture-bound perceptual/aesthetic biases. Rudolf Arnheim is provacative on this point:

> "Mere orderliness leads to increasing impoverishment and finally to the lowest possible level of structure, no longer clearly distinguishable from, chaos, which is the absence of order. A counter principle is needed, to which orderliness is secondary. It must supply that which is to be ordered. I describe this counterprinciple as the anabolic creation of a structural theme, which establishes what the thing is about, be it a crystal or a solar system, a society or a machine, a statement of thoughts or work of art." [1]

Continuity is such a counterprinciple. How then is the structural theme elaborated? How does it explain different built environments? Continuity as a structural theme would provide the basis for recognizing those distinctive differences which grow out of (respond to) the enduring and vital realities of a place. Articulation of this structural theme generates new vocabularies, allowing greater sensitivity to qualitative distinctions among places. This

---

1. Arnheim, Rudolf, Entropy and Art: An Essay on Disorder and Order, Los Angeles: University of California Press, 1971, p. 49.

then is the purpose of this thesis -- to give expression to a new comprehension of the built environment and thereby, a new structural theme for historic preservation. Our approach is to document the distinctive qualities of a place and explain them in terms of a larger structural theme (landscape relationship is that structural theme) which being independent of time and culture (time-fixed/culture bound biases) places the distinction within a larger setting and history.

A Methodology

Continuity can be defined as encompassing two dimensions -- temporal and spatial. Contuinuity entails a relationship to both history and location. Therefore, continuity and differentiation have three major attributes that a workable structural theme must embody. These attributes are:

1. Continuity over space. The built environment is part of a larger physical reality regardless of cultural variations within it. Here one investigates the relationship between a settlement and its geographic region. Inasmuch as this settlement/region may be subdivided by ethnic or cultural groups (such as Boston's ethnic neighborhoods), the structural theme must be culturally independent in order to apply to all situations of difference. Also it must be culturally independent to avoid the,previously described, counter effect that culture-bound bias has on continuity.

2. Continuity through time. The built environment exhibits qualities which are continually recognizable over time despite transient physical changes. Here one investigates those dimensions of the built fabric which are self-preserving and exert a continuing influence on present and future development. The structural theme must exist in a time independent state.

3. Differentiation. The built environment will vary from one place to another in appearance, scale, siting and so on. Here, one investigates the dimensions of difference between built environments and explains them as manifestations of the same structural theme. The structural theme must be transferable.

In this study we are primarily concerned with discussion of these attributes with reference to our landscape relationship structural theme. Each attribute is the basis for a test of the hypothesis -- specifically tests for cross-cultural continuity, temporal continuity, and differentiation. Taken together, the three tests evaluate our landscape relationship structural theme in terms of the previously presented goals of preservation endeavor. In this way, theoretical work is linked to practical need.

Operational definition of differentiation and continuity also provides a basis for selection of an appropriate test site. Since we are trying to identify continuity and physical variations over time, culture and geography; and appropriate study area is characterized by

these three conditions. Therefore, the study area selected for this investigation is the upper Rio Grande valley of Northern New Mexico. The diversity and power of New Mexico's landscape, the longevity of its colonial settlements, and the clarity of cultural distinction among colonizing periods as well as cultural diversity of its present inhabitants; combine to present appropriate conditions in which to evaluate our structural theme. Of the landscape, J.B. Jackson notes:

> "The first newcomer to Union County (N.E. New Mexico) discovers that there are at least three distinct countrysides ... yet the atmosphere of a turbulent and mysterious past (geologically as well as human) so omnipresent here as to be almost palpable, may be said to effect directly and indirectly the point of view of every native South-Westerner ... everywhere in America scars of remote and violent events in nature are softened by weathering and concealed by vegetation -- here they are still fresh and terrible ..." [1]

In reference to time, Aldo Van Eyck cites:

> "The pueblo cities Orabi and Acoma for instance have been inhabited uninterruptedly ever since the twelfth century by the very same community." [2]

Discussing cultural diversity, Peter Van Dresser notes:

> "Whereas in much (perhaps most) of the continental United States, a similar conflict between the 'old' (Indian and Hispanic) and the 'new' (Anglo) resulted in extinction or complete demoralizations of the former, in New Mexico the issue is still unresolved. Deeply rooted in their upland fastness of the Sangre-de-Cristo, San Juan, Sandia and other (mountain) ranges, a whole constellation of Hispanic villages and stream-bank settlements still shelter a sizable fraction (probably a fifth) of the State's population. In these areas, the old language is current, the native adobe architecture dominates the scene ..." [3]

---

1. Jackson, J.B., Landscape Vol. 1, No.2, 1951, p. 10.
2. Van Eyck,Aldo , "The Pueblos," Forum, (Holl.), Vol. 16, No.3, August 1962, pp. 95 - 114.
3. Van Dresser, Peter, Landscape Vol. 10, No. 11, May 1960, pp. 11-14.

In trying to comprehend continuity amid the numerous variations which characterize Northern New Mexico, similarities in the built environment become recognizable when viewed as having a reciprocal connection to the natural setting. Thus, landscape/builtscape relationship is the focus of our structural theme and the hypothesis we subject to the previously described tests. The form of the theme ultimately identified is not limited to an idea but is presented as a set of key linkages between built and natural phenomena -- linkages which survive our tests for continuity and differentiation. These linkages are independent of time and do not vary with culture -- they constitute a relationship between some built setting and its natural context, regardless of built scale, form, or style. That is, regardless of whether the people are Indian, Hispanic, or Anglo or whether the architectural envelope is adobe, mobile homes, or corrigated sheet metal -- the settlement evidences a fundamental relationship between settler and land.

A language useful in describing the relationships between a settlement and the landscape it embraces must be sensitive to both the conceptual and structural connections that may exist:

A. Conceptual relationships are parallel assiciations between the built and natural environment, but associations not necessitated by natural phenomena. Replication of a distant mountain peak in the massing of a church steeple is an example of a conceptual landscape relationship.

B. Structural relationships are the direct result of a physical interface between built and natural environments. A streetbend in response to a creek bed is an example of a structural landscape relationship.

Documentation of structural/conceptual landscape relationship requires a survey methodology which facilitates comparative analysis of test sites. That is, the methodology must provide a means of documenting the natural and built setting as well as built settings of varied cultural identity, so that both the threads of similarity and points of difference can be identified. To do this, the survey methodology must:

1. Document both landscape and settlement in similar terms so that systematic comparison can be made.
2. Externalize the scale of consciousness through which a people relate to the landscape around them -- reveal the expansiveness of the landscape to which a people respond.
3. Be responsive to the scale at which a settlement is perceived, such as automobile scale or pedestrian scale.

Our final distillation of linkages, as presented in this initial research, cannot be labled a comprehensive vocabulary of landscape/builtscape relationships. A comprehensive vocabulary is the kind of product ultimately needed for practical application. However, it is our intent to make at least three contributions toward this end:

1. To identify a structural theme appropriate for comprehending unique qualities of the built environment relative to historic preservation -- one which resolves the differentiation/continuity dilemma.

2. To document a study methodology and means of analysis which can be used by other people in other places to expand the work started here.

3. To begin a vocabulary of landscape linkages (manifestations of the structural theme); to which others, hopefully, will contribute.

CHAPTER I

THE STRUCTURAL THEME

GENERAL STATEMENT OF THE THEME

The sweeping vastness of Southwestern prairies seems to parallel a vastness of Southwestern cities. As if competing with the natural expanse, development of immense scale and preponderant engineering has become characteristic of this one-dimension landscape. This compulsion to make an impression on the natural setting can be illustrated by an examination of how cities present themselves in picture postcards. After perusing postcard racks in a prairie city like Dallas, certain regional characteristics become obvious. The cards seem to portray an encompassing of space rather than a pinpointing of place. One often-seen image is that of the Dallas Fort Worth International Airport, cited for its almost inconceivable size. The airport flings its gangly concrete legs over 27-plus square miles of what was previously farm land. Another postcard image is the Dallas Convention Center. The central exhibit space in this facility is measured in terms of football fields. This scale-consciousness is more a basic reaction to the horizontality of the land than a mere desire always to be the biggest. The prevalence and symbolism of these large-scale building complexes reinforces the theory

that a vast landscape yearns for vast built statements upon it.

The idea of a space-focusing environment versus a place-focusing one may at first seem unclear, but it is what prevails in the spread cities of the Southwest. If we follow the postcard experiment in an older, denser city like Boston, the place focus becomes clear. Glossy cards portray familiar historic sites such as Bunker Hill, Old North Church, Government Center, etc. One has little trouble calling up a mental portrait of this classic American City as a composite of these colorful sites. In a newer sprawling city like Dallas, a distinct image is harder to grasp -- a function of not only newer, more homogenous, architecture, but also the scale at which it is viewed. One's whole concept of the city is that of a mosaic of vistas viewed against the ever-present backdrop of downtown. The essential feeling is that of a slow-motion circumscription of architectural models surrounded by green lawns and scale perfect trees.

Another postcard aspect that reinforces the place/space orientation is that in the space emphasis many views presented are aerials, a scale that defies human relationship but begins to define itself as an integral part of the natural landscape. Boston's most familiar viewpoint is anything but aerial -- it is instead winding narrow brick streets lined with highly articulated row houses. This vantage point creates a seemingly endless urban fabric, a city composed of well worn channels and path-ways which afford few street level

vistas. The "space city," by contrast, is so often seen from a distance as an outgrowth of the raw prairie that placing limits on its form is easy.

The above casual observations of Dallas and Boston, while unscientific, do place the two cities in some relationship to their larger setting and to each other while at the same time recognizing their differences. There is a level of comprehension beyond an enumeration of stylistic expression or urban design qualities which allows us to talk about visual differences as a product of an underlying function -- a reciprocity between the built and natural environments which is manifested in qualities of view, scale, awareness of urban limits and self-image. A better understanding of this reciprocity could lend some objectivity to identification of visual themes appropriate for preservation. Further, it could lend some objectivity to the justification of appropriate visual themes. An hypothetical program using the above observations as a guide would generate very different but comparable objectives for the two cities. Performance criteria generated in the program would be an operational expression of visual objectives as suggested by an understanding of this underlying function -- instead of a generalized restatement of regional style. Therefore, a concession to view corridors in this program would not have to be solely explained in muddled references to public amenity or important visual characteristics, but could

be presented in more comprehensible terms which place the view corridors in some structural relationship to other aspects of the built and natural environment.

The above hypothetical program is in essence talking about characteristics of the built environment in ecological rather than descriptive terms. Such a perspective allows evaluation of small scale environmental changes in terms of larger scale impacts -- an understanding which made pollution control operational but is noticably absent from design evaluation.

Landscape/builtscape interaction, as a structural theme is strongly inferred by casual comparison of Boston and Dallas and can be better substantiated, as well as understood, through more systematic analysis. Such analysis requires test sites which have easily discernable, definable and measurable differences between landscape settings and settlement within them. Specifically, a study area needs to embody the following:

A. Significant and diverse landscape characteristics -- that is, an area of clearly definable landscape differences which can be described in geologic terms and readily perceived as significant qualitative contrasts.

B. Cultural diversity -- that is, diversity which is perceived in easily recognizable and definable manifestations. Inasmuch as the means of describing this diversity is primarily limited

to social and built environmental terms, contrasts must be significant in this area. Also description in such terms is most relevant to our hypothesis.

C. A long history of settlement, so that characteristics of field observed sites are not simply the product of a single generation but the evolutionary outcome of succeeding generations. A long history of settlement provides the opportunity to observe site characteristics over time and thus identify themes in the evolutionary process.

D. Culturally distinct settlements as well as settlements which are a point of cultural confluence (overlay). Thus, cross-cultural landscape/builtscape linkages can be identified by comparison.

E. Available and useful data which will permit the channeling of our efforts to the hypothesis rather than secondary undertakings -- that is, not to re-create the wheel but contribute to an existing body of data that has been compiled by sources in their respective fields.

F. A sufficient number of settlements which are manageable in size.

G. Accessibility of both sample settlements and useful information sources.

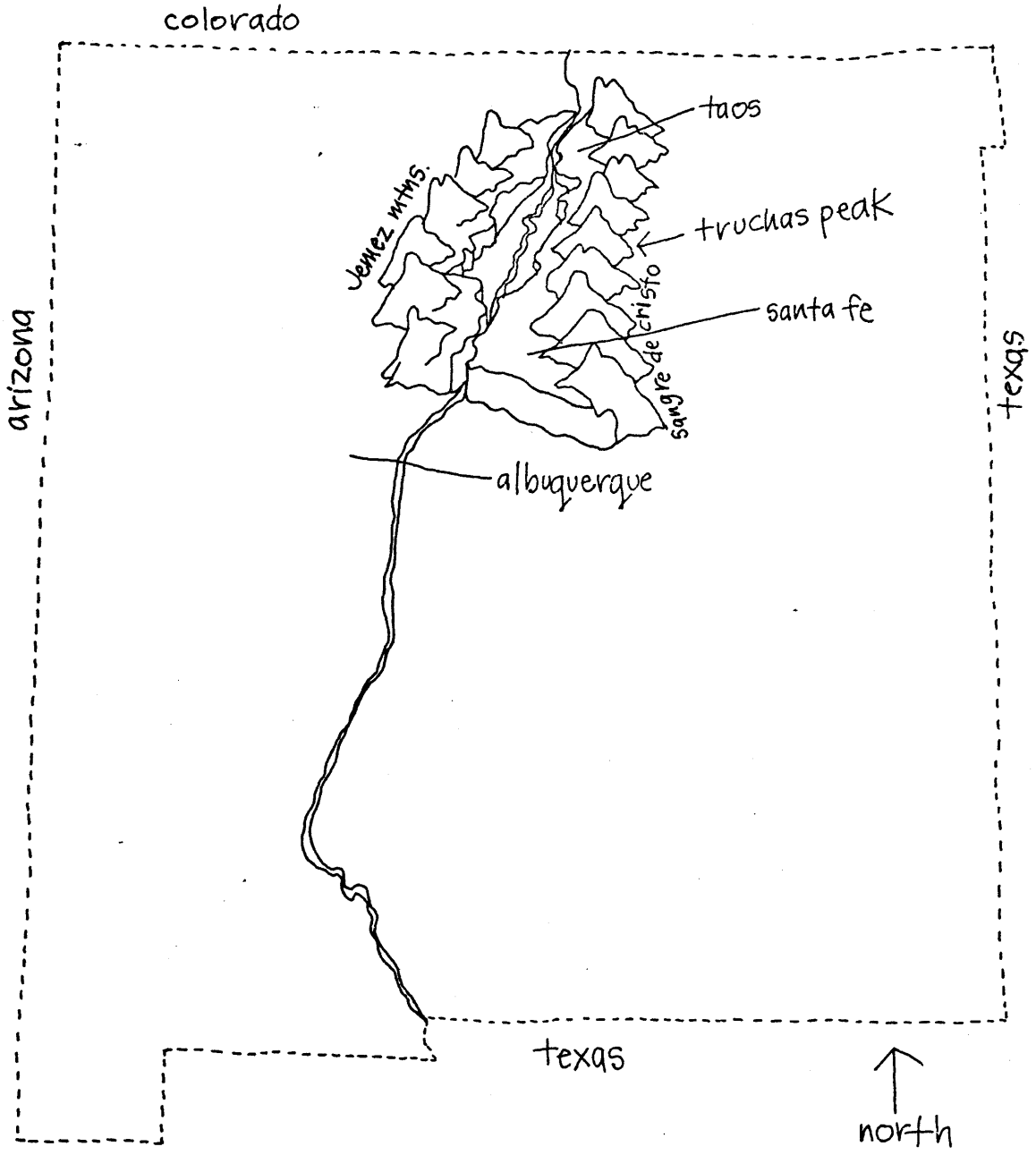
THE STUDY AREA

The study area selected is located in approximately North Central New Mexico and symmetrically bisected by the Rio Grande (as noted on Figure 1). It is an area approximately 70 miles long and 50 miles wide . Relative to the conditions of criteria F, it contains 45 discernible settlements divided among people of Indian, Hispanic and Anglo-American identity. As criteria E and G prescribe, these settlements have been the subject of numerous studies by qualified anthropologists, historians, economists, social scientists and others. Prominent names among these researchers include Adolf Bandelier, Bertha Dutton , Edgar Hewett, Ralph Emerson Twitchell, J.B. Jackson, Peter Van Dresser, Alfonso Ortiz, Claude Levi-Strauss and many others including prominent novelists and artists. In fact, so much information, compiled by private and public sources, is available that selection becomes a real problem and help from resident experts such as museum staff as well as cooperative public agencies like the State Highway Department is necessary.

Specifically, the study area's eastern boundary is defined by the crestline of the Sangre-de-Cristo mountains, from Wheeler peak North (highest peak in New Mexico -- 13,480 feet) to Shaggy peak on the South. In between, the boundary touches (from South to North) Thompson Peak, Lake Peak, Sante Fe Baldy, East Pecos Baldy, Truchas Peak (second highest point in New Mexico -- 13,101 feet), the Mora

figure 1

the study area



County line, Osha Mountain, Apache Peak, Taos Cone and Wheeler Peak -- making a line which defines the drainage divide between the Rio Grande and the Rio Pecos. Inasmuch as the eastern boundary follows a mountain range, it defines the visible eastern limit of the world as seen from within the study area.

The northern boundary is defined by the rim of a broad plain which extends south from Colorado and ends in an abrupt precipice along the northern edge of the mid-Rio Grande Valley. From Vallecito Mountain, just south of Wheeler Peak, the northern boundary follows the Rio Lucero to its confluence with Arroyo Seco, then Arroyo Seco to its confluence with Rio Taos, and then Rio Taos to its confluence with the Rio Grande. Forming the west edge of the Rio Grande Gorge as it widens into a broad valley, the boundary turns north at Black Mesa's southern tip. From here it follows Black Mesa's western crest then Rio Vallecitos to Canon de la Madera. As previously noted in regard to the Sangre-de-Cristo Mountains, Black Mesa forms a visual barrier across the valley's northern edge -- there is no perception of a world beyond it except for a few distant mountain peaks which float in space like clouds. Black Mesa is a monolithic mass, whose crest is about 7,000 feet in elevation and can be seen from Santa Fe, some 40 miles south.

At Canon de la Madera, the western boundary begins and extends from the canyon to Valle Grande Peak, then south along Arroyo

Seco to El Rito. From here, the crest line of the Jemez mountains dictates boundary location. It follows high elevations to Sierra Negra Peak, passes just west of Abiquiu and extends to Cerro Pelon (9,367 feet). The boundary continues to Cerro Toledo, Cerros del Abrigo and across Valles Caldera to Redondo Peak (highest point in the Jemez -- 11,254 feet). From Redondo Peak, the line follows a rough drainage divide between tributaries of the Jemez River and northern Rio Grande. In so doing, it follows lava flows of early volcanic activity to Borrego Canyon. As noted with regard to the eastern and northern boundaries, the Jemez crests form a visual termination of any western view.

The southern boundary begins at Borrego Canyon and roughly follows the edge of basaltic lava flows from the Jemez (eastern edge of Santa Ana Mesa). Then it follows the edge of basin deposits from the Sangre-de-Cristo. These basin deposits form a broad plain which extends west and south of Santa Fe. However, the clarity of this natural edge is obscured by a sloping toward Galisteo, by the hills of Cerrillos and by an expanse of gravel mounds around Santo Domingo. Therefore, in the absence of an exact natural alignment, the southern boundary follows the Santa Fe railroad right-of-way. These tracks carry the boundary to its intersection with highway 23, just south of Shaggy Peak. Unlike boundaries of the east, west and north; this

line does not coincide with a visual terminus. However, it does follow a rough edge of geologic change. Further south, the visual landscape and climate are different. It is more arid, due to lower elevation, and visually more expansive, due to an absence of enframing mountains. Where the Sangre-de-Cristo rise east of Santa Fe in a series of rolling, green foothills; the Sandia Mountains rise east of Albuquerque in a sudden thrust of bare rock. Where the mid-Rio Grande Valley is characterized by a labyrinth of small bad land formations and canyons; areas south of the boundary are characterized by monolithic mesas and spatial expanses. Most important is that areas further south belong to a separate set of geologic events. Thus, the Santa Fe right-of-way not only follows the base line of an elevation change but also the edge of a geologic transition.

GEOLOGIC DESCRIPTION

As criterion A prescribes, the study area chosen is a unit of interacting geologic phenomena which create a diverse natural landscape in a microcosm with visually obvious boundaries. Five significant geologic events interact to form this diverse landscape (as illustrated in Figure 2). These are:

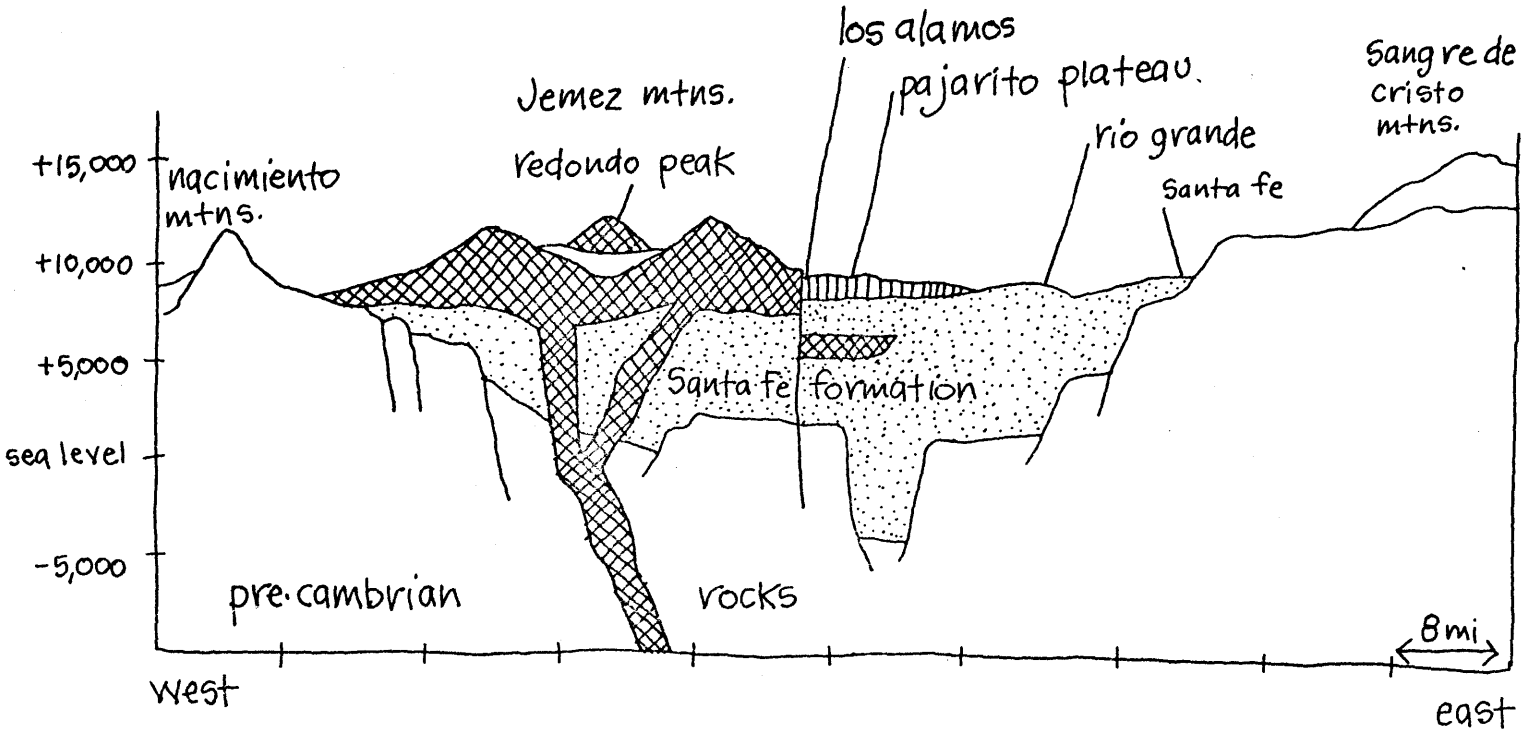
1. The back-and-forth movement of an inland sea over the area which left deposits of sandstone, shale and mud (Precambrian to Pennsylvanian time).[1]

2. Folding and faulting of the earth's surface as the Sangre-de-Cristo and Nacimiento Mountains rose (as high as five miles in places)[2] and subsequent dropping (lowering) of the Rio Grande valley floor. This formed a structural trough known as a "Graben".[3] The structural trough is, in many respects, an island rising above its semi-arid surroundings.[4] (Miocene time, approximately 100 million years ago)

3. Generation of numerous streams along the steep slopes of the Sangre-de-Cristo and Nacimiento Mountains which flow toward the Rio Grande, carrying thousands of feet of sand, silt and gravel as basin fill. This fill material becomes subject to

---

1. Pettitt, Roland A., Los Alamos Before the Dawn, Los Alomos, Pajarito Publications, 1972, pp. 7,8.
2. Baldwin, Brewster and Frank E. Kottowski, Scenic Trips to the Geologic Past #1, Santa Fe, Socorro, New Mexico Institute of Mining and Technology, 1968, p. 10.
3. Adam, George F. and Jerome Wyckoff, Landforms, N.Y., Golden Press, 1971 p. 83.
4. Van Dresser, Peter, A Landscape for Humans: A Case Study of the Potentials for Ecologically Guided Development in an Upland Region Santa Fe, Jene Lyon Publishers, 1972, p. 4.



geologic cross-section of study area
figure 2

subsequent erosion by changing stream courses, wind and the Rio-Grande itself. [1]

4. Growing deposits of basin fill caused further sinking (down faulting) of the trough and increased weight and pressure stimulated igneous activity in sub-basement rock. The igneous activity forced magma (molten rock) through faults at the base of the Nacimiento which became intermixed with and metemorphisized earlier deposits of sedimentation and basin fill. Igneous activity built up a forty-mile long formation of mountains (Jemez) east of the Nacimiento range thereby creating a new western boundary for the Rio-Grand trough.

5. Violent volcanic activity during early Pleistocene time (one million years ago) [2] -- The climax of this volcanic sequence was the release of 50 cubic miles of ash,pumice and rock which completed formation of the Pajarito plateau and literally deflated a majestic volcanic cone formed by earlier volcanic build-up (estimates of 14 to 27 thousand feet high) [3]. As a result, the mountain center slumped back to the earth, forming a round depression called a caldera [4] which is 18 miles across and surrounded by smaller cone-shaped peaks. Finally,

---

1. Baldwin, Brewster and Frank E. Kottowski, Scenic Trips to the Geologic Past #1 -- Santa Fe, Socorro, New Mexico Institute of Mining and and Technology, 1968 p. 43.
2. Pettitt, Roland A., Los Alamos Before the Dawn, Los Alamos, Pajarito Publications, 1972, pp. 12-13.
3. Pettitt, Roland A., Los Alamos Before the Dawn, Los Alamos Pajarito Publications, 1972, p. 12.
4. Adam, George F. and Jerome Wyckoff, Landforms, N.Y., Golden Press, 1971, p. 65.

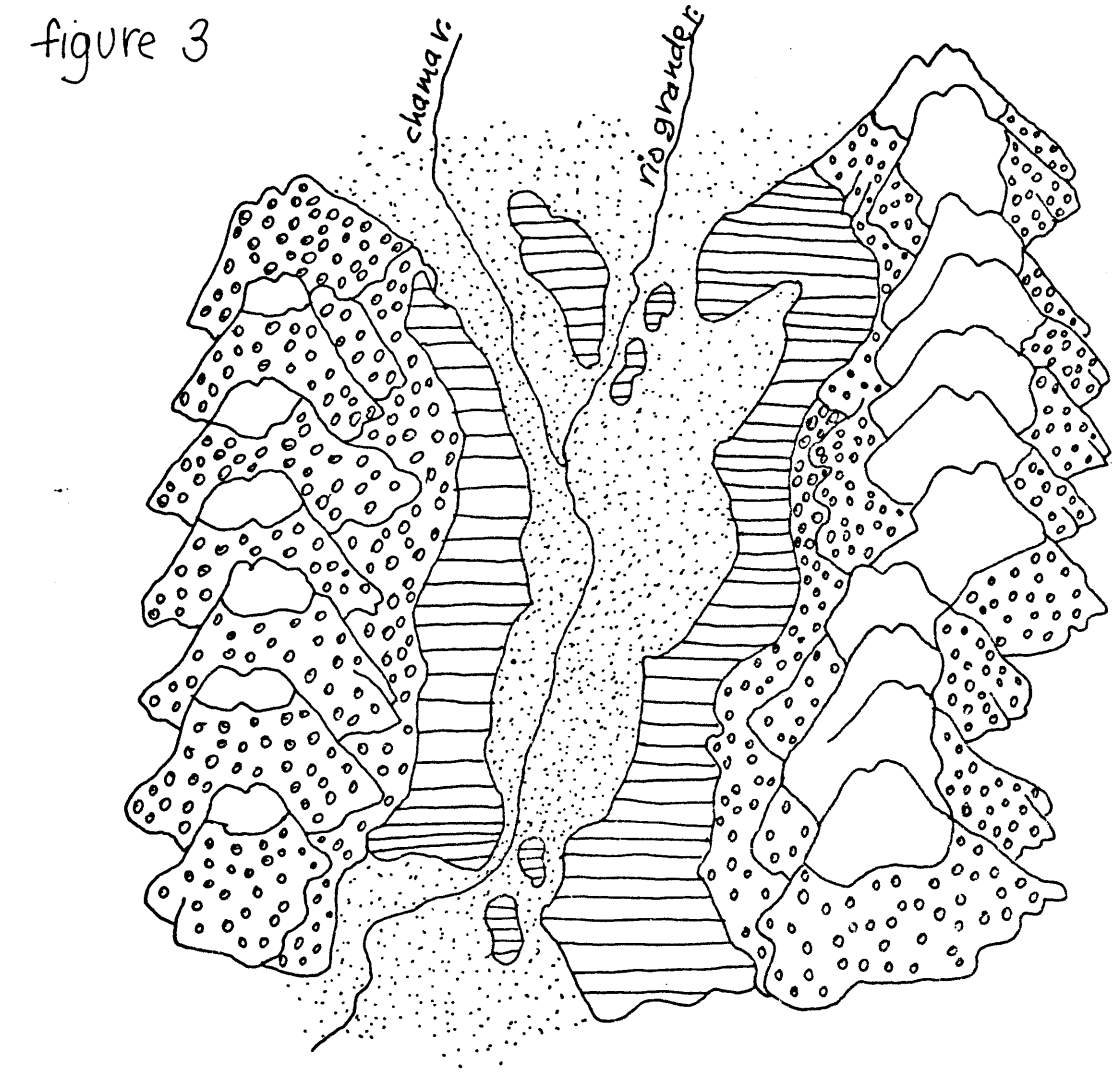
the present Redondo Peak (11,254 feet) rose in the center of this depression. [1]

These events and their interaction have formed a geologic profile of varied rock types which range from hard granite to flaky lava tuft and soft sandstone. Over these materials aeons of erosion by streams, winds and the Rio Grande has taken place. However, different materials are more or less resistant to the forces of erosion. This results in a diverse setting of land formations, spatial expanses, and color/texture of visible rock material. To this diversity can be added the additional effects that dramatic elevation changes have on climatic and vegetative characteristics. The impacts of elevation change are well documented and catalogued as "Life Zones" of native vegetation. (illustrated in Figure 3) There are five life zones ranging from the hot,barren Lower Sonoran (4,500 minus feet) to the year-around snow covered Artic/Alpine (above the timber line). In the middle fall more benign habitats such as the lush, cool Canadian/ Douglas Fir Zone (from 8,500 feet to 9,800 feet).

---

1. Reeve, Frank D. and Alice Ann Cleaveland, New Mexico: Land of Many Cultures, Boulder, Pruett Publishing Co., 1969, p. 15.
2. Beck, Warren A., and Ynez D. Haase, Historical Atlas of New Mexico Norman, University of Oklahoma Press, 1969, p. 14.

figure 3



life zones of native vegetation

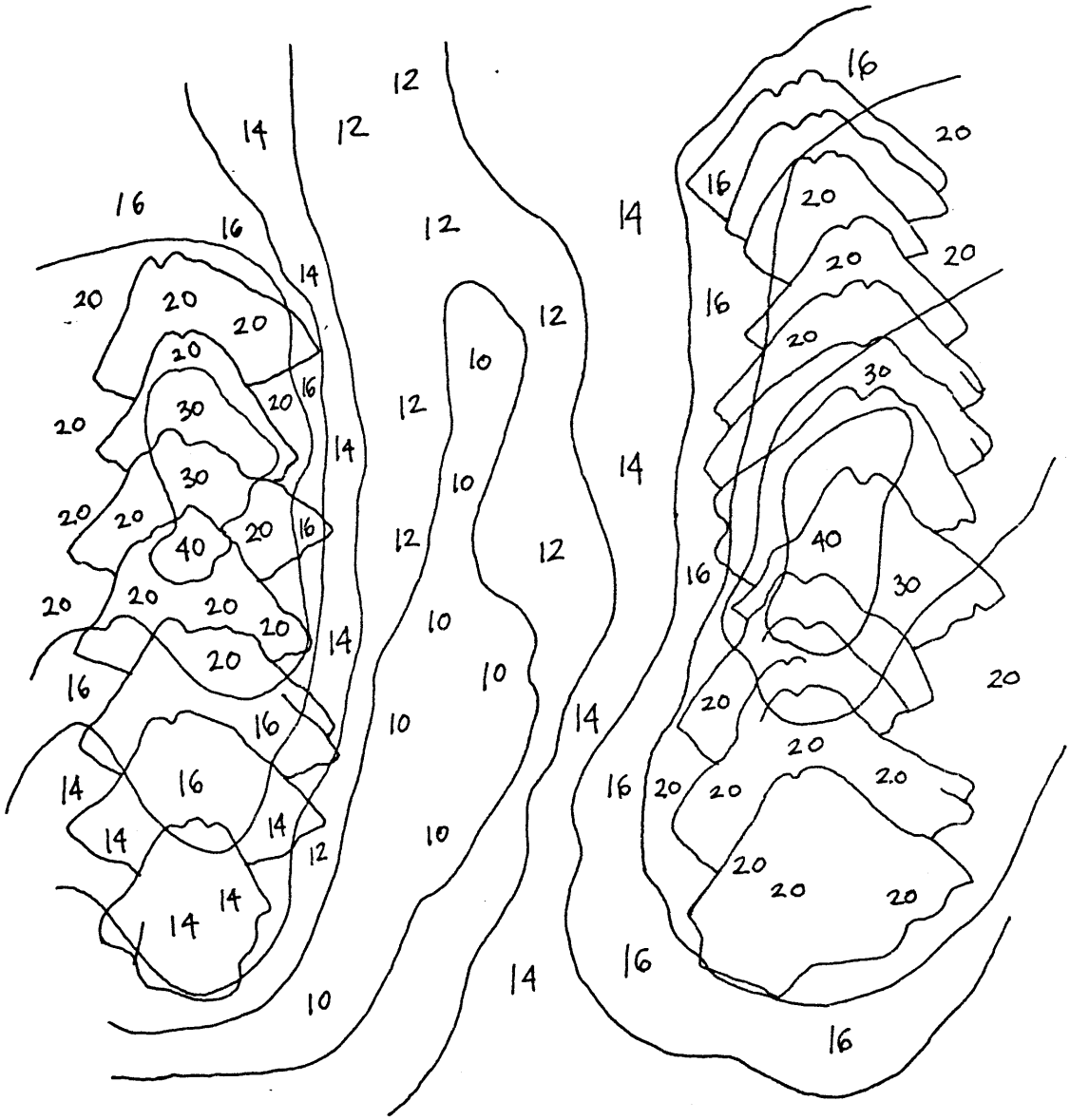
Upthrusting of the study area landmass (rarely below 6,000 feet above sea level) sets it generally in climatic zones different from most of New Mexico, which reinforces the definition of this area and makes it a true geologic unit.[1]

Most significant about the area's climatic character is the influence that mountains have over local rainfall. Water laden clouds drifting west from the Gulf of Mexico across flat expanses of western Texas, become relatively unstable by the time they confront eastern slopes of the Sangre-de-Cristo. As these clouds rise over the mountains, they embrace increasingly cooler air, thus causing condensation and ultimate discharge of water upon the mountain peaks. A similar cycle takes place over the Jemez, and it is this hydrological process which supplies a constant water source for irrigation of valley farm lands below. An almost daily summertime occurance is the late afternoon formation of heavy rainclouds over peaks of both the Jemez and Sangre-de-Cristo mountains. (Effects of altitude on rainfall shown in figure 4).

---

1. Van Dresser, Peter, A Landscape for Humans: A Case Study of the Potentials for Ecologically Guided Development in an Uplands Region, Jene Lyon Publishers, 1972, p. 4.

figure 4



average annual precipitation in inches

LANDFORM DISTRICTS

Inasmuch as altitude and erosion play such a major role in distribution of climatic, vegetative and geologic characteristics; they become the basis for formulating criteria by which the study area is divided into component landform districts. More specifically, thses criteria are:

A. Extent of erosion -- Is the land formation broken, unbroken or completely worn down?

B. Steepness of slope -- Is the land formation on an expanding plain or mountain side?

C. Altitude -- What are the changes in general climatic and vegetative condition?

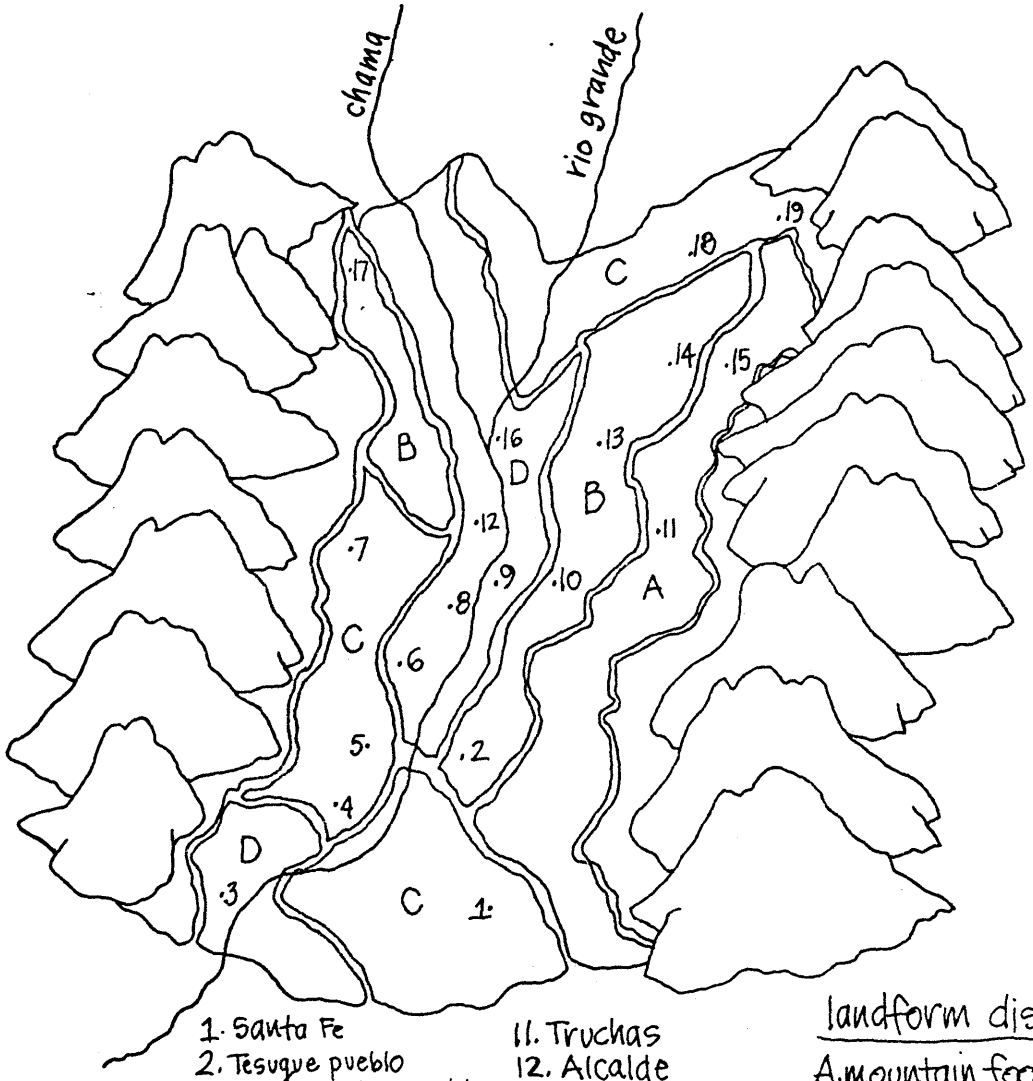
As shown in Figure 5, the study area is divided into four major landform districts. These are:

1. Mountain foothills -- Steep, sloping, rolling landforms -- generally above 7,555 feet (plus or minus 500 feet, depending on slope conditions) and occupying the Transition/Ponderosa Pine Life Zone as well as Canadian/Douglas Fir Zone. Slopes at base elevations rise 1000 feet over one to three miles and increase toward the summit. Due to altitude, annual precipitation averages 20-30 inches/year which makes this a green and convoluted landscape. While rainfall is suitable for agriculture, severe topography confines human habitation to narrow stream depressions. (See Figure 6)

2. Bad-lands -- This name makes specific reference to the eroded remains of the old trough bottom. Being primarily made

figure 5

the study area and landform districts



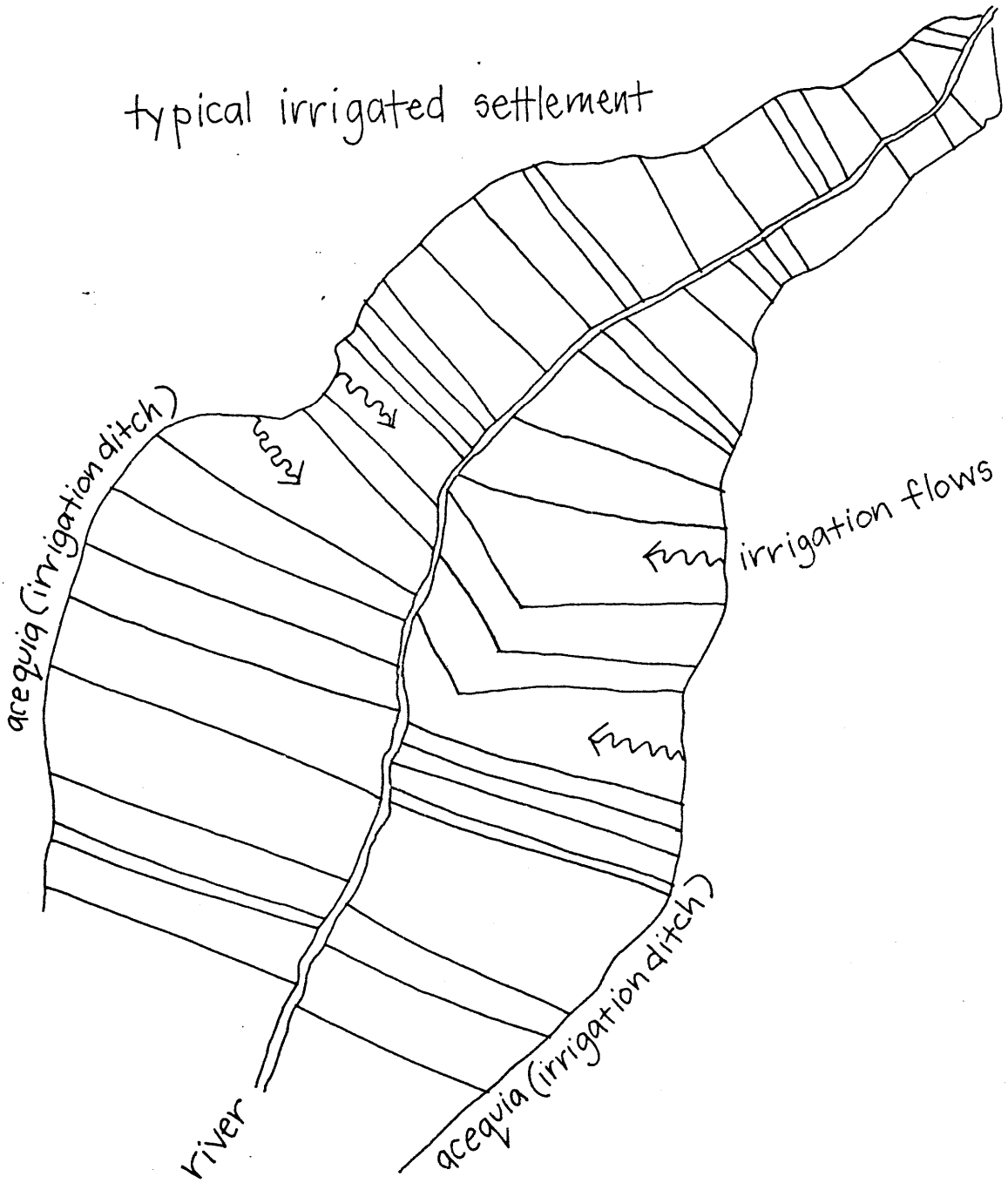
1. Santa Fe
2. Tesuque pueblo
3. Santo Domingo pueblo
4. Frijoles ruins
5. White rock
6. San Ildefonso pueblo
7. Puyé ruins
8. Santa clara pueblo
9. San Juan pueblo
10. Cordova
11. Truchas
12. Alcalde
13. Las Trampas
14. Picuris pueblo
15. Placitas
16. Velarde
17. Abiquiu
18. ranchos de taos
19. taos pueblo

landform districts:

A. mountain foothills
B. badlands
C. plateaus
D. valley bottoms

of sandstone and other sedimenatry deposits, or soft volcanic tufts, the old trough bottom has been eroded into many bizarre shapes which stand in long lineal groupings adjacent to some previous water flow. Throughout the district, erosion has cut a labyrinth of canyons and interconnecting ravines. Slope of the land is much more gentle than previously described with reference to mountain foothills. Slope generally falls 1000 feet over three to ten miles but elevation rarely falls below 6,000 feet. Typically, landform shapes are tall and thin, closely resembling a gothic spire. Also they are horizontally layered as a result of sedimentary build-up and interspersed with rolling sand hills. Due to a lower elevation, this district primarily occupies portions of the Upper Sonoran Life Zone. Therefore, the landscape is more arid than previously described. Ground cover consists of scattered clumps of Juniper and Pinon which expose large areas of sandy (pink to yellow) soil. Annual precipitation ranges from 12 to 16 inches and settlement is restricted to stream bottoms for need of irrigation. (See Figures 4 and 6) The Bad-lands landform district is a transition zone between the mountain foothills and the Valley bottoms. Therefore, it shows properties of both.

figure 6


typical irrigated settlement
acequia (irrigation ditch)
irrigation flows
river
acequia (irrigation ditch)

3. The plateaus -- these are primarily unbroken remains of the old trough bottom which are visually characterized as large flat to gently sloping expanses dotted with Juniper or Pinon and occasionally punctuated by a deep canyon or erupting hill. From within the valley, plateaus are recognizable as long monolithic edges forming a rim at the base of mountain foothills. From the plateaus the entire geologic diversity of this study area is visible. As noted in reference to the Bad-land district, plateaus lie in the upper Sonoran Life Zone and rarely fall below an elevation of 6,000 feet. Limited rainfall here also necessitates irrigation thus confining settlements to river and stream banks. There are three plateau districts -- one around Los Alamos (Pajarito Plateau), another at Santa Fe (Caja del Rio Plateau) and another one at Taos.

4. Valley Bottoms -- this district symmetrically bands the Rio Grande, El Rito and Chama Rivers. Extensive erosion has made the immediate landscape one of lower and more dispersed relief than previously noted. Visual expanses characterize this district with many fine views of the entire Jemez and/or Sangre-de-Cristo ranges. Land is generally flat or somewhat undulating ,and vegetation is very sparce except for dense clusters of cottonwood trees along river banks. A myriad of mountain streams have, by the time they reach

this lower elevation, merged into larger rivers or arroyos and the landscape is consequently scarred by a system of wandering waterways. (An identical process created the previously described bad-lands.) Alluvial soils and broad river bottoms, as well as a reliable water supply fed by melting mountain snow, make this area ideal for irrigated agriculture despite limited annual rainfall of 10 to 12 inches. Valley districts generally lie below 6,000 feet but still within the Upper Sonoran Life Zone. The extremely sparce ground cover of the Valley Bottoms consists primarily of sagebrush and juniper. (See Figure 3.)

CULTURAL DESCRIPTION

Criterion B, for study area selection, as previously described, cites cultural diversity as a necessary characteristic. In regard to the Rio-Grande Graben,it can be said that cultural diversity is as significant and contrasting as geologic diversity. The Keresans (an Indian language group) are the earliest known permanent residents of the study area (approximately 1150 A.D.), having immigrated from the Zuni-Acoma territory of west central New Mexico. It is likely that Keresan travelers migrated along the Rio Grande -- a route later used by Spanish explorers. In 1300 A.D. other Indian groups (Tewa and Tiwa) from Mesa Verde (Colorado) and Chaco Canyon (northwestern New Mexico) built permanent settlements in the study area -- most likely using the Chama River as their migratory route.[1] Beginning with the Keresan arrival and continuing through the early Spanish domination, Indian groups experienced a long period of settlement and relocation within the study area boundary. As they moved from place to place, they left behind a landscape scattered with ruins of old townsites such as Tsankawi, Puye, Tyuonyi, Yapashenye[2] and a great many others.

---

1. Ortiz, Alfonso, New Perspectives on the Pueblos, Albuquerque, University of New Mexico Press, 1972.
2. Hewett, Edgar L., Handbooks of Archaelogical History: Pajarito Plateau and Its Ancient People, University of New Mexico Press, Albuquerque: 1938 and Pettitt, Roland A., Los Alamos Before Dawn , Los Alamos, Pajarito Publications, 1972, pp. 27 and 28.

When Spanish explorers arrived in 1541, approximately 80 pueblo villages were clustered along the upper Rio Grande and its major tributaries. These settlements contained an estimated population of 20,000. [1] Pueblo villages were large population centers, even by present day standards, containing as many as 1500 inhabitants (Tyuonyi). Pueblo people built a stable culture profusely expressed in arts, ceremonies and architecture. The name Pueblo Indians is derived from the physical form of their settlements.

While Spanish explorers penetrated the study area in 1541 actual Spanish domination did not begin until 1598 when Don Juan Onate established a territorial capitol at San Gabriel (across the Rio Grande from present day San Juan Pueblo). In 1610, the territorial capitol of Spain's distant frontier was relocated to present day Santa Fe and a long period of Spanish colonization began. Colonists were temporarily driven out during the violent pueblo revolt of 1680, but occupation was re-established in 1693 under General Don Diego de Vargas. Earlier migration routes along the Rio-Grande, later used by Spanish explorers coming out of Mexico, now became the major throughfare for Spanish colonists (El Camino Real). In addition, colonists

---

1. Pettitt, Roland A., Los Alamos Before the Dawn, Los Alamos, Pajarito Publications, 1972, p. 31.

clustered their settlements along the river and its major tributaries due to the reliable water source, arable land, and accessibility. In so doing, they followed a pattern established by Indians before them.[1] A major bulk of this settlement, including establishment of the capitol, occurred within the study area. Strong central government from Santa Fe, dominance of the Catholic Church, frequent hostile relations with pueblo Indians, and status as conquerers in a new land, prevented the cultural blending of the Spanish and Indian people. There was a certain sharing of technology but never a sharing of identity. Military presence facilitated acceptance of Catholicism, but the church remained, and still remains, spatially separated from the ceremonial life of most pueblo groups. Spanish presence, with its heritage of European architecture, centralized religion and mercantile motivation, became manifest in arts, ceremonies, social structure and building styles quite different from pueblo neighbors.

In 1846, General Stephen Kearny raised the U.S. Flag over Santa Fe, thus ending 250 years of Spanish/Mexican domination and beginning an era of Anglo influx. Santa Fe, previously the Spanish capitol, now became the Anglo capitol and a major point of

---

1. Beck, Warren A., and Ynez D. Haase, Historical Atlas of New Mexico, Norman: The University of Oklahoma Press, 1969, p. 17.

population distribution at the end of the Santa Fe trail as well as commercial hub. The review and invalidating of many earlier Spanish landgrants by Congress and a special U.S. Court of Private Land Claims freed much land for Anglo settlement. For reasons previously described regarding Indians and Spanish, initial Anglo settlement clung to the banks of the Rio-Grande and tributaries. This pattern prevailed until 1890 when the railroad made wider dispersement possible. However, even by 1910, a region centering about the study area and representing only 10 percent of New Mexico's geographic area; contained 30 percent of its population.[1] Anglo settlers who came in search of cheap land, treated the area as a market commodity, and their control is characterized by a history of public and private efforts to make it profitable. These include agricultural programs like the Northern Rio-Grande "R.C. and D." (Resources Conservation and Development), intended to increase crop and livestock production commensurate with market standards; dams built by the Corps of Engineers, intended to enhance property values and expand agriculture; and community programs like HELP (Home Education and Livelihood Program) intended to make the people more "employable" via skill training.[2] Thus, Anglo presence has been in

---

1. Van Dresser, Peter, A Landscape for Humans: A Case Study of the Potentials for Ecologically Guided Development in an Uplands Region, Santa Fe: Jene Lyon Publishers, 1972, p. 15.
2. Van Dresser, Peter, A Landscape for Humans: A Case Study of the Potentials for Ecologically Guided Development in an Uplands Region, Santa Fe: Jene Lyon Publishers, 1972, pp. 31 and 32.

constant conflict with Indian/Spanish subsistance use of the landscape. In striking contrast to both the Indian and Spanish settler, the Anglo, for reasons of technological change they introduced, economic attitudes toward land and their urban/industrial heritage, manifest their presence in a significantly different architecture, urban form and political/social structure.

As the above descriptions reveal, there is significant diversity in cultures of the study area,and their differences are readable in both social and built environmental manifestations. Further, in keeping with criterion C, for study area selection, there is a long and rich history of settlement covering over 800 years. Many present-day townsites have been continuously lived in from the beginning of North America's written history (i.e., San Juan and Cochiti Pueblos).

Criterion D, for study area selection, prescribes that test sites of both cultural distinction and culture confluence be available. Certainly,in the Rio Grande graben both are abundant. For example, Santa Fe was a Pueblo site before Juan Onate established Spain's territorial capital in 1608. During 12 years of Indian rule following the Pueblo Revolt (1680) the Governor's Palace was incorporated into a large pueblo surrounding Santa Fe's old royal plaza and the plaza itself contained two Kivas[1].

---

1. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capital, Santa Fe: New Mexican Publishing Co., 1925, pp. 137-138

Santa Fe retained its status as a territorial capitol even after U.S. occupation, later to become a state capitol for New Mexico itself. Thus, this settlement is not only a point of cultural confluence but an identifiable location within it has been the focus of this confluence. Santa Fe is but one of a number of such test sites. Settlements of cultural distinction are also characteristic of this study area. These include numerous Indian pueblos like San Ildefonso, Santo Domingo, and Taos. Also included are many Spanish Villages. For example, the entire population of Cundiyo, are descendents of the original landgrant recipient -- Captain Jose Antonio Vigil. [1] Another example is Las Trampas. Settled in 1731 by 74 year-old Juan de Arguello, it has remained an isolated mountain village (consisting of 34 families) for over 200 years and only recently made accessible by paved highway. [2] Sites of strictly Anglo identity are not so numerous. Most of them take the form of Santa Fe suburbs and are, therefore, not really culturally distinct as a settlement. However, in 1943, Los Alamos was selected by the Secretary of War as an appropriate site for development of the Manhattan project. Subsequent years saw the growth of Los Alamos as a city comparable in size to Santa Fe.

---

1. Bullock, Alice, Mountain Villages, Santa Fe, William Gannon Publishers, 1976, p. 13.
2. Bullock, Alice, Mountain Villages, Santa Fe, William Gannon Publishers, 1976, p. 7.

Growth of Los Alamos gave rise to Whiterock as a satellite town. These are new settlements built since 1943 and embody the physical qualities of contemporary urban environments.

TOWN TYPOLOGY

In order to take a preliminary look at structural and conceptual relationships between study area settlements and the landscape they embrace, it is necessary to identify some general characteristics of these sites. This preliminary look is the first test of our structural theme. it is meant to gauge not only the soundness of further research but also the usefulness of this selected study area in assisting that research. Just as a typology of landscape districts was earlier constructed, a typology of builtscape characteristics is needed so that correlations between the two sets of phenomena can be identified. While it is desirable, in constructing this typology, to use all settlements within the study area, twentieth century urbanization and post-war growth has caused the merging (blurring) of towns like Santa Cruz, Chimayo, and Espanola as well as the dispersal of various rural villages like Ojo Caliente. Therefore, it becomes necessary to work from examples which meet certain physical criteria. These are:

1. Physically definable as a settlement -- It is necessary for the site to embody sufficient physical substance so that a definable settlement can be perceived, as opposed to a diffuse fabric of farm homes.

2. Not too large to comprehend -- At this early stage, the study reflects only a rudimentary understanding of landscape/builtscape relationships -- a fragile understanding which is obscured rather than enhanced by incomprehensible test sites. Further, it is inappropriate, at this stage of initial study , to make comparisons between veritable cities and the small rural villages or pueblos, more typical of our study area. Therefore, it seems counter-productive to assume the burden of addressing large and complex urban centers at the level of detail subsequently displayed in this thesis. Not only does familiarity with the hypothesis and methodological approach limit the size of test sites, but also time constraints.

3. Not so small that is eludes identifiable physical form -- Some settlements because of population decline or remote isolation do not have sufficient physical presence to constitute an identifiable settlement but appear more as scattered independent parcels without comprehensible inter-relationship.

4. Display a range of uses -- In order to document landscape/builtscape relationships among settlements of various cultural identities, it is important that test sites be of an equally independent nature. Therefore, a range of uses is one dimension of such independence, which helps to

separate out those examples which are a functional subset of some larger built phenomena.

5. Services an identifiable area -- Another dimension of independence is that the settlement service an identifiable group of people or district of habitation. In other words, there exists a distinction between insiders and outsiders. Such is not only a dimension of physical independence but also cultural identity, a point to be discussed in more detail later.

6. Not a special or singularly unique example -- This last criterion is intended to separate out those settlements which might have been unduly manipulated by special circumstances out side those controlled for in this thesis. (circumstances controlled for in the thesis include culture, geography and time) For example, Los Alamos itself was built to maximum security standards as required by the Manhattan Project while later satellite towns like Whiterock were not. Los Cerrillos was a gold rush settlement built over a short period of time and then largely abandoned. Also, Taos has for over a hundred years been a tourist attraction and home of artists.

These criteria are used to identify a set of test sites which are uniform in status and physican dimension. These sites can be subjects of a preliminary evaluation intended to reveal both a more systemized verification of the landscape relationship hypothesis and an indication of the study area's potential for more

detailed research. More specific and systematic testing, presented later in the thesis, will draw upon examples derived from further distillation of this initial selection. At present, these physical criteria, identify fairly uniform samples with which to work. Out of the 45 discernible settlements, previously mentioned, 20 survive deletion under one or more selection criteria as illustrated by the matrix in Figure 7. Of these 20, 11 are primarily of an Hispanic identity, although some are culturally more specific than others. Issues concerning the strength of cultural association will be addressed as part of later continuity testing where sites of weaker cultural association will be deleted from this set. Eight of 20 are of an Indian identity and one is Anglo. Santa Fe, while an urban center of significant size (40,000) has not been deleted because the historic center of Santa Fe (Figure 8) rather than the entire metropolitan area is being considered. Downtown Santa Fe has retained key qualities of its late 18th- mid 19th century form. This phenomena is recognized in delineation of Santa Fe's Historic District. The Santa Fe Historic District by no means delineates a specialized zone. The Santa Fe plaza, as defined in 1610, has remained the focus of an active and vibrant downtown area throughout periods of cultural succession -- up to and including the present day.

figure 7

Initial site selection

		physically definable as a settlement	not too large to comprehend	not so small that it eludes physical form	displays a range of uses	not a special or singularly unique site	services a distinct area
* 1	Taos pueblo	✓	✓	✓	✓	✓	✓
2	Taos	✓	✓	✓	✓		✓
* 3	Ranchos de Taos	✓	✓	✓	✓	✓	✓
4	Rinconada						
5	Embudo						
6	Dixon	✓	✓	✓	✓	✓	
7	Peñasco						
* 8	Las Trampas	✓	✓	✓	✓	✓	✓
* 9	Truchas	✓	✓	✓	✓	✓	✓
10	Chimayo				✓	✓	
11	Santa Cruz					✓	
* 12	Cordova	✓	✓	✓	✓	✓	✓
13	Cundiyo	✓	✓	✓	✓		✓
14	Nambe pueblo					✓	✓
15	Nambe	✓	✓	✓			✓
16	Pojoaque P.					✓	✓
17	Pojoaque					✓	✓
* 18	Velarde	✓	✓	✓	✓	✓	✓
* 19	Alcalde	✓	✓	✓	✓	✓	✓
20	Ojo Caliente						
* 21	El Rito	✓	✓	✓	✓	✓	✓
* 22	Abiquiu	✓	✓	✓	✓	✓	✓
23	Rodarte					✓	✓

physically definable as a settlement	not too large to comprehend	not so small that it eludes physical form	displays a range of uses	not a special or singularly unique site	serves a distinct area		
				✓	✓	Hernandez	24
		✓	✓	✓		Española	25
✓	✓	✓	✓	✓	✓	Santa Clara	26 *
✓	✓	✓	✓	✓	✓	San Juan	27 *
✓	✓	✓	✓	✓	✓	San Ildefonso	28 *
✓	✓	✓	✓	✓	✓	Tesuque pueblo	29 *
				✓		Tesuque	30
✓	✓	✓	✓		✓	Los Alamos	31
✓	✓	✓	✓	✓	✓	Whiterock	32 *
				✓		Ojo Sarco	33
✓	✓	✓	✓	✓	✓	Picuris	34 *
✓	✓	✓	✓	✓	✓	Peña Blanca	35 *
✓	✓	✓	✓	✓	✓	Cochiti	36 *
✓	✓	✓	✓	✓	✓	Santo Domingo	37 *
				✓		La Cienega	38
				✓		Lamy	39
✓	✓	✓	✓	✓	✓	Santa Fe	40 *
✓	✓	✓	✓	✓	✓	Placitas	41 *
				✓		Agua Fria	42
✓	✓	✓				Cochiti Lake	43
			✓	✓		Chamita	44
				✓	✓	Chamisal	45

Hispanic identity #'s - 3, 8, 9, 12, 18, 19, 21, 22, 35, 40, 41

Indian identity #'s - 1, 26, 27, 28, 29, 34, 36, 37

Anglo identity #'s - 32

* indicates acceptability as a site

(Cochiti pueblos surrounding landscape) destroyed by a corps of engineers dam

✓ indicates compliance with criteria

figure 8

Santa Fe central area

(This characteristic of Santa Fe's central urban area plays an essential role in our test for temporal continuity.) Downtown Santa Fe remains a fairly close approximation of Spanish colonial town form as prescribed by Spanish law[1] and as such is useful to our typology.

Setting aside Whiterock as the single Anglo example and considering the 19 other test sites (fairly equally divided among Spanish and Indian), a rough typological classification according to spatial organization seems apparent. As noted by Stanley Stubbs in his book, Birds Eye View of the Pueblos[2] and confirmed by our examples (illustrated in Figure 9), essentially three types of pueblo organization can be identified.

1. Single plaza -- Organization of structure about a single central open space -- almost a large scale courtyard due to continuous lines of construction.

2. Series of connected plazas -- Organization about several open spaces which are interconnected by breaks in construction or gateways. The important inter-relations of 1 and 2 will be discussed in Chapter IV.

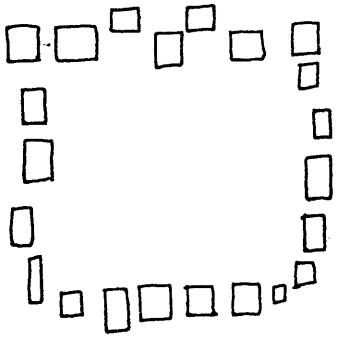
3. Parallel house blocks -- Organization in long continuous rows of construction separated by linear common spaces.

---

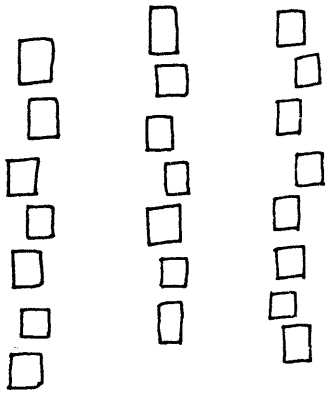
1. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capitol, Santa Fe: New Mexican Publishing Co., 1925, p. 51.
2. Stubbs, Stanley A., Birds'-Eye View of Pueblos, Norman, University of Oklahoma Press, 1950, p. 14.

figure 9

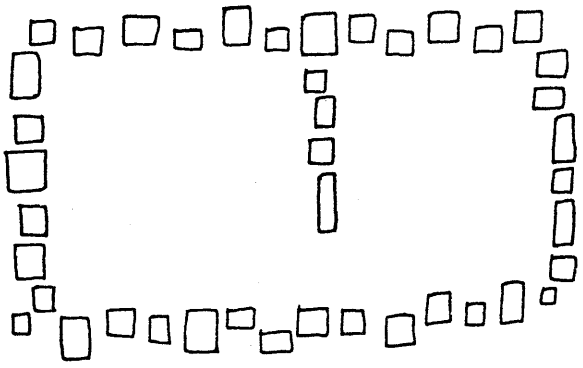
organization of indian pueblos



1. single plaza



3. parallel house blocks



2. series of connected plazas

Continuous construction is broken at staggered points to allow for cross-circulation. It is important to note that these linear corridors are communal spaces, not streets -- although movement is one of their many functions.

Likewise, considering the Hispanic settlements, a classification similar to that noted by Nancie Gonzalez in her book, The Spanish-Americans of New Mexico: A Heritage of Pride, can be devised.[1] Parallel with pueblo classification, it characterizes spatial organization of Hispanic villages as noted below in Figure 10.

1. Central Plaza -- Organization about a central open space which is seemingly more formal than that noted in reference to pueblos. The Spanish plaza is dominated by a church and its sub-structures. Construction is less continuous than pueblos, but is more geometric and built relationships more axial. Finally, the space has a more commercial association.

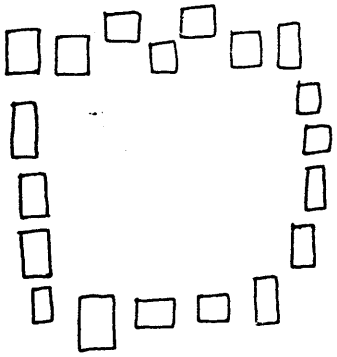
2. Linear Organization -- Due to limited areas available for settlement, along rivers and streams, and the importance of irrigated agriculture to survival, farmland was typically apportioned in strips which extended perpendicular to the major waterway. Consequently, distribution of construction paralleled the distribution of private property, creating a

---

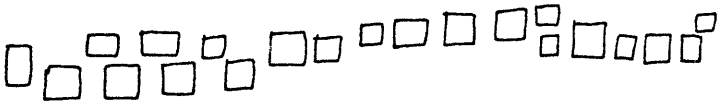
1. Gonzalez, Nancie L., The Spanish-Americans of New Mexico: A Heritage of Pride, Albuquerque: University of New Mexico Press, 1967.

figure 10

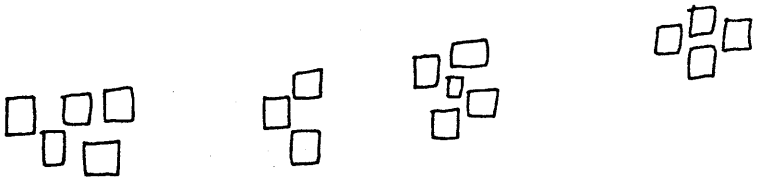
organization of hispanic villages



1. central plaza



2. linear organization



3. nucleated organization

long lineal settlement. Future subdivision of property was also influenced by this original pattern. Such a pattern is not apparent in Indian settlements.

3. Nucleated Organization -- Settlements which started as a collection of families often grew around family compounds, making a total town form that is a series of built clusters. Sometimes these clusters are physically connected, sometimes spatially separated, but they share a township identity which is derived from their close proximity relative to surrounding landscape.

TESTING THE STRUCTURAL THEME

The above represents a very preliminary break down of settlement types according to generalized spatial characteristics. It is interesting to note in comparing cultural groups that in all instances, Indian settlements generate a physically defined communal space. However, in Hispanic settlements, communal space is limited to those villages with central plazas. Further, Indian settlements seem generally more complex than the Hispanic, with a physical form that suggests conceptual rationalization -- such as a series of interconnected plazas. The Hispanic settlement on the other hand, seems generally more explainable in functional terms that relate, in some cases, to the immediate setting -- except for the central plaza which remains a conceptual organization. Given that differences in the spatial organization of settlements can be identified and that such organization implies different levels of conceptual activity, it remains to be established if this bears any correlation with landform districts as previously defined. The indication of different conceptual activity is a reason for maintaining cultural distinction in establishing these correlations, as cultural groups may be responding to different landscape phenomena. Therefore, the following test is not intended to enumerate links between specific settlement characteristics and individual landscape qualities (this will be

done subsequently in more detailed analysis) but to see if generalized comparisons between Indian and Hispanic settlements, noted in the preceding paragraph, can be more systematically stated as a result of knowing the landform district in which they occur. In other words, if landscape/builtscape relationship is a determinant in the form of human settlement, then knowing the conceptual level implied by a form (as illustrated with Hispanic/Indian comparison) and the landform district in which it is located, we should be able to explain some recognizable differences between settlements. Also, if landscape/builtscape relations are meaningful as hypothesized, then some sense of organization in the distribution of culturally common settlements over the landscape should be revealed.

The adjacent illustration (Figure 11) is a simple matrix showing the coincidence of settlement type and landform district by cultural group. This is a very crude initial analysis, but it reveals some substance to the hypothesis, indicates a direction for more detailed analysis, and reveals that particular investigation of the study area should bear some academic fruit. Essentially one can see that Hispanic settlements of type 2 and 3 (linear and nucleated, previously recognized as a functional connection to use of land) occur in two of the four landform districts:

figure 11

town type by landform district

cultural group	settlement type	landform district
Indian	1. single plaza	• valley bottoms
	2. series of connected plazas	• valley bottoms
	3. parallel house blocks	• valley bottoms • plateaus • badlands
Hispanic	1. central plaza	• plateaus • badlands • mountain foothills (only 1 example)
	2. linear	• valley bottoms • mountain foothills
	3. nucleated	• valley bottoms • mountain foothills

1. "Mountain Foothills" where the pressures of limited land and the immediate [1] presence of dramatic landforms makes other than a functional (structural) response difficult.

2. "Valley Bottoms" where spatial expanse and lack of immediate landforms necessitates a functional (structural) response for lack of any other organizational guide.

Also Hispanic settlement type 1 (central plaza) occurs primarily in the "Bad-land" and "Plateau" landform districts (except Placitas which lies on the edge of a "Mountain Foothill" district) but not in the "Valley Bottoms." The "Central Plaza" settlement, described earlier as implying a conceptual rationale, would, as out hypothesis suggests, embody some conceptual response to the landscape. Thus, "Central Plaza" sites are found in areas where there is an immediate land phenomenon which can be responded to and land available for such a response. Hispanic reaction to immediate landscape is reinforced by previous discussions of "linear" and "nucleated" settlements types. It is also reinforced by the whole system of landgrants, property ownership, and farmsteading as introduced by this culture. Again, in the "Valley Bottoms," where more than ample space for Plaza towns exists, there are none, as there are no immediate land conditions which precipitate that kind of response. This will be discussed in more detail later and evidence shown which reveals that where significant landforms

---

1. This will be defined in the next chapter but refers to proximity.

do exist in the valley , they precipitate a very obvious built reaction -- for example, Alcalde.

In contrast to this distribution of Hispanic settlements, Indian sites within the "Valley Bottoms" are all Plaza centered. As noted earlier, Indian sites imply a characteristic conceptual rather than functional (structural) rationale (the latter characteristic of Hispanic examples). Further, there is a well documented conceptual awareness among Indian groups, of distant landforms as indicated by ceremonial identification with distant mountains. These are referred to by anthropologists as "sacred mountains," such as Sandia Peak some 30 to 40 miles from most pueblos in the study area (there are also ceremonial hills and mesas). (A more detailed discussion of this point is in the next chapter.) Therefore, it seems reasonable that Indians living in the "Valley Bottoms" would conceptually respond to a distant landscape, for lack of functional proximity to immediate landforms of significance and in keeping with ceremonial/philosophic tradition. As a result, they would build "Plaza Centered" settlements in areas where Hispanic residents fail to do so -- the "Valley Bottoms" -- and this is exactly the circumstances observed.

As this brief analysis illustrates,an organization in the distribution of Hispanic settlements over the landscape can be identified,and some major differences between Indian and Hispanic settlements can be explained using the hypothesized

structural theme. In summary there are two principle observations:

1. Hispanic settlements of a conceptual organization ("Plaza Centered") are found in the "Plateau" and "Bad-land" landform districts while settlements of a functional (structural) organization are found in "Mountain Foothills" and "Valley Bottoms." This pattern can be explained by landform district and cultural reaction to immediate land phenomena.

2. Indian settlements of a conceptual organization ("Plaza Centered") are found in a landform district where Hispanic people build functionally (structural) organized settlements. This difference can be explained by reference to landform district and cultural reaction to distant rather than immediate land phenomena.

Identification of an organization in the distribution of Indian settlements over the landscape is not so clear as all but two pueblos are located in "Valley Bottom" districts,but historic migrations to valley locations and continued ceremonial connection to distant landforms may, in closer analysis, reinforce the structural theme further.

It appears from these observations that the study area does offer some promise for more detailed research and that a methodological framework which allows each test site to be evaluated in light of qualifying cultural conditions is needed.

Foremost among these conditions is a grasp on the scale of landscape being reacted to by a particular culture. This is discussed in the next chapter and called "scale of consciousness." Another important condition is the "operational scale" -- such as automobile versus pedestrian scales. Identification of these and other framework factors are the subject of Chapter II.

CHAPTER II

THE REFERENCE FRAMEWORK

Settlement and landscape comparisons, as outlined in Chapter I, identify a need for cultural reference points from which to view landscape/builtscape interaction. The purpose of this chapter is to establish this cultural perspective. Such an understanding is necessary to comprehend both the landscape being reacted to and the form in which that reaction may be manifest. Once identified, important cultural reference points need to be incorporated into the study methodology as analytical and fieldwork devices which facilitate systematic comparison of data As a methodological framework, cultural reference points provide objective rationale for determining the scale of landscape under consideration and for identifying one component of the built environment over another as expressing a specific relationship to that landscape. The previous chapter demonstrates, in a preliminary way, that such a framework can only be formulated from an understanding of the culture itself. Therefore, this chapter endeavors to lay out some basic characteristics of Hispanic, Indian, and Anglo culture groups, within the study area, as justification of our resulting reference framework. The following text is not intended to be a complete cultural analysis but merely an identification of cultural characteristics we deem useful to this study.

Essentially the reference framework is constructed from an understanding of three cultural characteristics as they vary from

Hispanic to Indian to Anglo people. These characteristics are:

1. Attitude toward land -- This was briefly discussed in the last chapter and concerns both the practical and ceremonial delineations of territory.

2. Organization of space -- This concerns the idea of "whole" as it relates to both house and settlement.

3. Social grouping -- This concerns the size and nature of social groups relevant to daily activities.

1. Attitude Toward Land: The illustration in Figure 12 is made from an aerial photograph of Taos pueblo and its surrounding farmlands. One quality regarding the allocation of land is clearly demonstrated by this drawing, and that is a lack of right angles or straight lines. By accepted legal standards, clear title to any of these subdivisions would require such a complicated calculus that determining property lines would be impossible. Thus, the drawing suggests a different attitude toward land, specifically property, than that reflected by the more geometric pattern of Hispanic (Figure 13) and Anglo (Figure 14) people. Indian groups have traditionally practiced, and still practice, a communal rather than a private management of land, which in conjunction with their agricultural techniques, expresses a different conception of man's relationship to nature.

Indian treatment of land has been misunderstood and exploited by Anglo colonial interests, based on a concept of private property.

figure 12

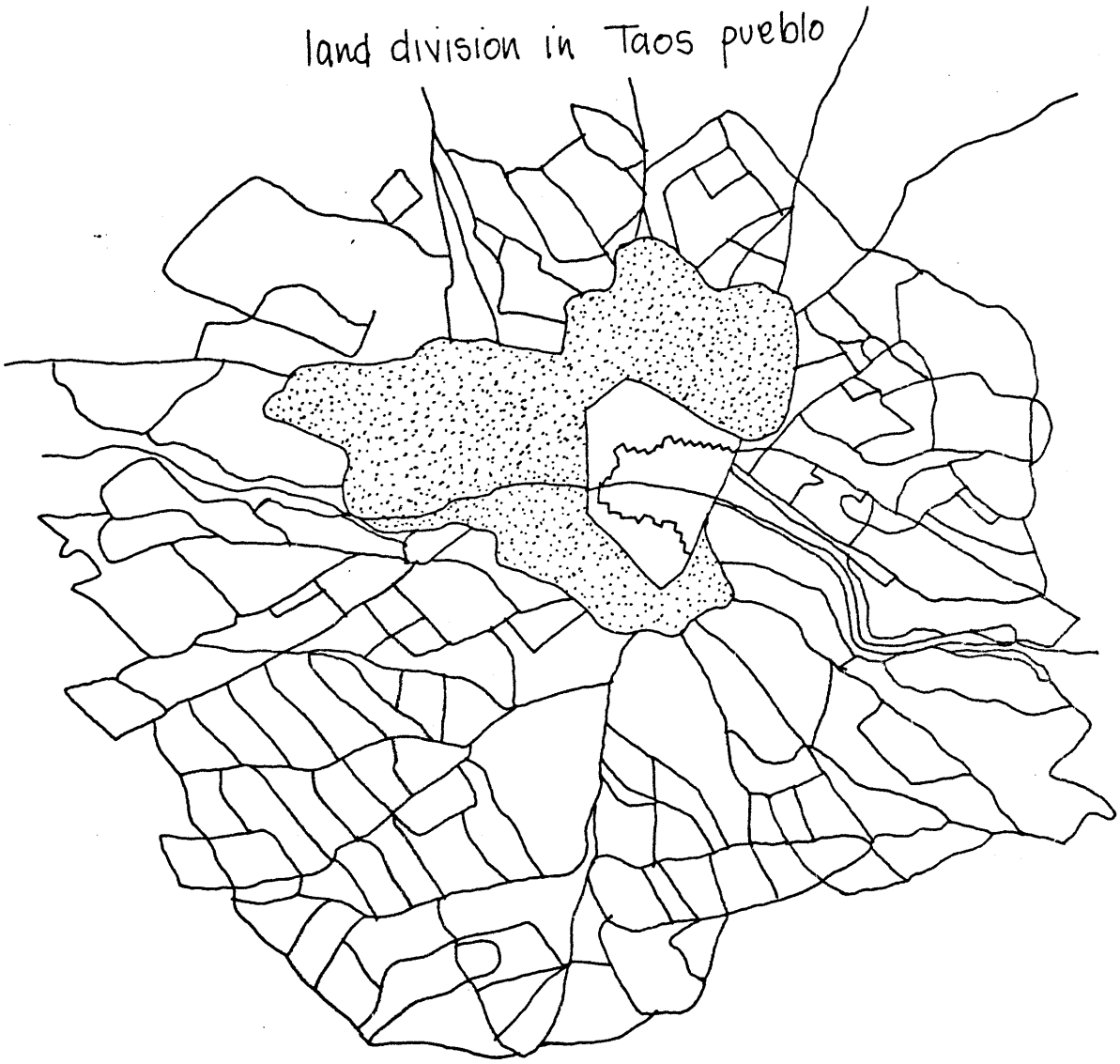
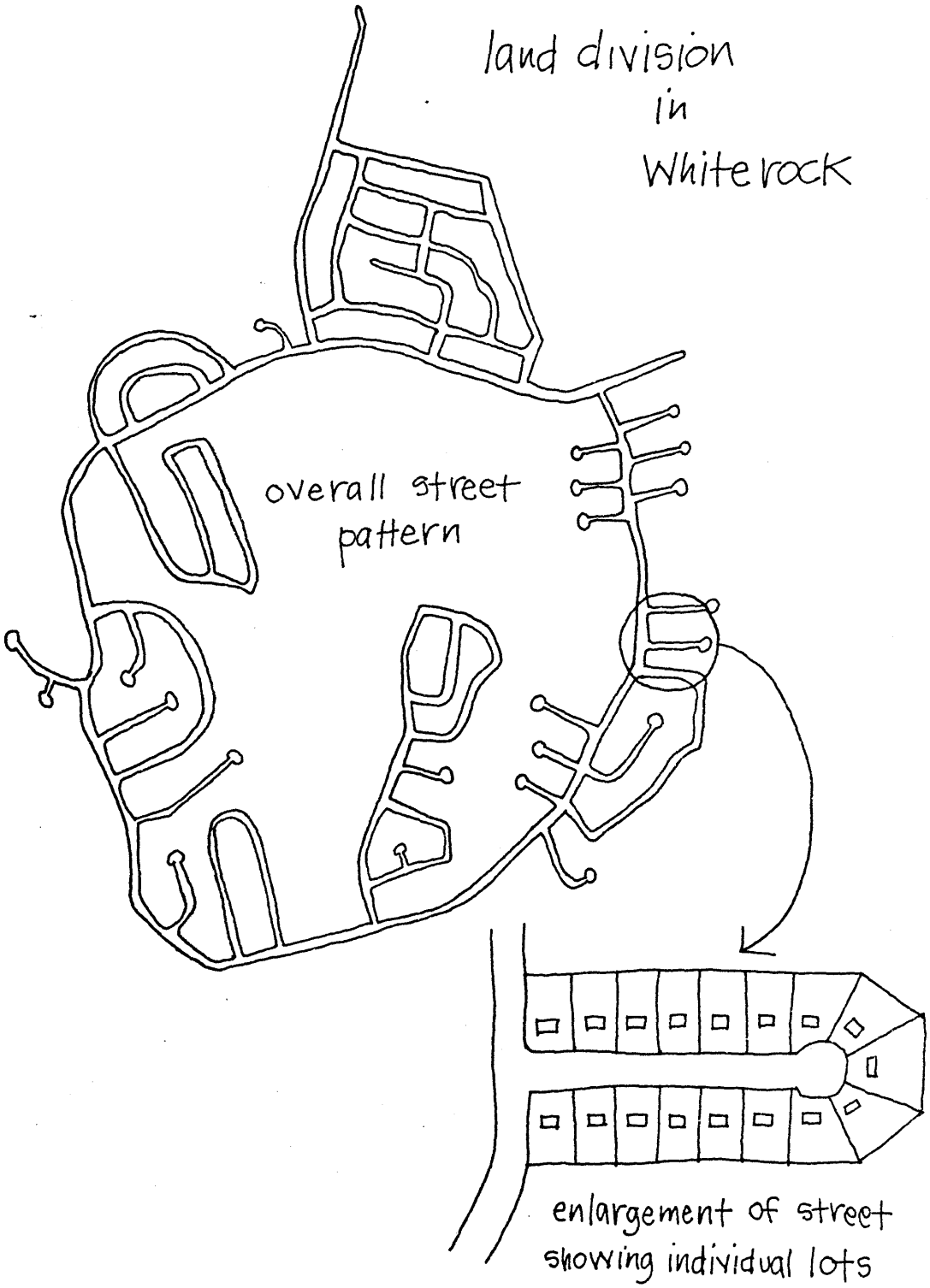


figure 13

figure 14


land division
in
Whiterock
overall street
pattern
enlargement of street
showing individual lots

Refusing to recognize the legitimacy of communal right to property, Congress in 1887 passed the now embarrassing General Allotment Act (Dawes Act) [1] The basic intent of this act was to assign a 160-acre tract to heads of Indian families, thus vesting them with private property and making a significant advance toward Indian acculturation into U.S. society. Supporting rhetoric suggested that if Indians were endowed with private property, they would abandon tribal ways and become more productive, by market standards. However, a much more understandable motivation was to make land available for Anglo settlement as land left following apportionment, was declared "surplus" by Congress.[2] In 1881, Senator Teller of Colorado spoke eloquently against this abuse of Indian land and culture:

> "The civilized Indians in the Indian territory hold all their land by a common tenure, and yet they do not work an acre of it in common any more than white men would under the same circumstances. Each Indian goes upon the reservation and takes for himself such land as is unoccupied and works it, and he works it just as long as he sees fit ... When he abandons it and goes away from it, then any other Indian may step in and take his place ... You propose to divide this land and give each Indian his quarter section... it is in the interest of speculators; it is in the interest of the men who are clutching up their land, but not in the interests of the Indians ... " [3]

---

1. Deloria, Vine, Jr., Custer Died for Your Sins, New York: Avon Books, 1969, p. 52.
2. Ibid, p. 53.
3. Congressional Record, 46th Congress, 3rd Session, Vol. XI, June 10, 1881.

(Fortunately, Pueblo lands of the Southwest were never actually affected by this law.)

These observations suggest that Indian attitudes toward land are similar to Anglo attitudes toward air -- land, like air is not bought or sold but exists,and every individual has a right to its use -- it is necessary for survival. In fact, the Indian attitude toward land runs much deeper and is far more complex as land and nature are the very focus of his religious/ceremonial life. Edgar L. Hewett, noted anthropologist and historian, makes this comment:

> "It is common practice for the Pueblo Indians to revere land eminences. They have their sacred mountains marking the four "world quarters" and many sacred hills." [1]

Alfonso Ortiz, anthropologist and himself an Indian from San Juan Pueblo (within the study area) gives us some idea of how big this ceremonial "world" is:

> " .. Oku Pin (Turtle Mountain) is about 80 miles to the South and Ku Sehn Pin (Stone Man Mountain) about 20 miles to the east .. the point of naming and locating them is to give proof of their objective existance and to give some indication of the conceptual range of the Tewa World ... The next tetrad represents the sacred Tsin or flat topped hills (badland landfarm district) ..." [2]

After siting other sacred dimensions of the Tewa landscape Alfonso Ortiz makes this added observation:

> "For at least three and a half centuries then, the Tewa have constructed their villages in quarters, just as they divide and clarify the physical world in quarters." [3]

---

1. Hewett, Edgar L. and Bertha P. Dutton, ed., The Pueblo Indian World: Studies on the Natural History of the Rio Grande Valley in Relation to Pueblo Indian Culture, Albuquerque: Univ. of New Mexico Press, 1945.
2. Ortiz, Alfonso, The Tewa World: Space,Time,Being and Becoming in a Pueblo Society, Chicago: The University of Chicago Press, 1969, p.34.
3. Ibid, p. 26.

Hewett and Ortiz reinforce what is well documented in a number of anthropological writings -- namely that Indian consciousness extends to a very distant landscape, and this landscape is held in reverence as evidenced by its significant influence on the daily lives of Pueblo people. The importance of distant landscape forms to the immediate environment of Indians is suggested by Alfonso Ortiz:

> "Nor is there any simple opposition between the center and the periphery in the Tewa world. Rather, each point on each of the tetrads (concentric rings of landscape features and shrines) is sacred and meaningful ... and no Tewas would say that the 'earth navel' on the distant mountaintop is any less sacred or important than the earth navel in the center of the village." [1]

Seemingly, these observations imply an attitude of subordination to landscape and nature. This attitude is also suggested by the land patterns illustrated in Figure 12. Taos land patterns reveal an absence of imposed order, and an organic adaptation of individual and collective fields to immediate land constraints. This attitude of subordination is most strongly revealed in Pueblo architecture itself. Adobe, the prevailing architectural material of Pueblo construction, is certainly not the material of people who intend to built monuments. It is a material which, like the landscape itself, is subject to the whimsical influences of erosion. The all but disintegrated remains of an abandoned building are a frequent sight in Pueblo villages. Indians were familiar with

---

1. Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming in a Pueblo Society, Chicago: The University of Chicago Press, 1969, p. 27.

rock masonry as demonstrated by the early settlement of Puye'[1] and Tyuonyi as well as the very beautiful "Stone Lions of Cochiti."[2] Stone is the material of shrines while the material of habitation remains one that needs constant upkeep to prevent it returning to mud. In fact, the whole attitude from that of material to lack of foundation and unbonded house corners would seem to be one of impermanence.

Thus, strong ritual and physical evidence exists which reveals a deep-rooted relationship between the Indian and his surrounding landscape. This relationship is one that has many conceptual manifestations, from the construction of the Tewa world in concentric rings of sacred landscape phenomena centered about the village[3] to the Corn Dance at Santo Domingo which sequentially fills the dance plaza with thundering feet just as clouds forming over distant mountain peaks move across the valley. Vincent Scully summarizes the Indian attitude toward land:

> "... (the) American Indian world is a place where no conception whatever of any difference between men and nature can exist. since there is in fact no distinction between nature and man as such, but only an ineradicable instinct that all living things are one..." 4

Refering back to earlier illustrated land patterns, the Hispanic's geometric division of land presents a sharp contrast to the organic pattern of Taos. Figure 13 was made from an aerial

---

1. Jackson, J.B., "Pueblo Architecture and Our Own," Landscapes, Vol 3, No. 2, 1953, p. 24.
2. Scully, Vincent, Pueblo-Mountain Village Dance, New York, Viking Press, 1972, p. 179.
3. Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming in a Pueblo Society, Chicago, The University of Chicago Press, 1969, p. 12.
4. Scully, Vincent, Pueblo-Mountain Village Dance, New York, Viking Press 1972, p. 7.

photograph of Rancho de Taos is fairly typical of patterns found in Hispanic settlements. Dependent on irrigated agriculture (See Figure 6) for survival, fields are laid out perpendicular to a central stream or river. In this way, water, released from an irrigation ditch (called acequias) along one or both edges of the narrow valley bottom, can flow down across crop land to the river from which it was diverted. The regular geometry of Hispanic subdivision suggests a sense of property definition, private territory, land about which some record is kept. However, land was not a commodity to Spanish settlers, it was "granted." As such, it ultimately belonged to the king of Spain. Futhermore, there was (and still is) little marketing of agricultural surplus. Even today, land is primarily used for the subsistance of people living on it. [1] Further, land holding is a means of integration with one's community. A stipulation often made in landgrants to settlers, stated that persons who transfered residency to another settlement, consequently relinquished "all rights he may have acquired to his property." [2] It was, after all, the very idea of land proprietorship that attracted Spanish colonists -- an idea supported by a landgrant system. Landgrants were in essence an official recognition, by the king of Spain, of an individual's right to a specified area of ground.

---

1. Weigle, Martha, ed. Hispanic Villages of Northern New Mexico, Santa Fe, Jene Lyon Publishers, 1975, p. 36. (Reprinted from 1935 study)
2. Gonzalez, Nancie L., The Spanish Americans of New Mexico: A Heritage of Pride, Albuquerque, University of New Mexico, 1967, p. 41.

Land ownership was and, for many Hispanic people, still is more than a means of identifying one's self with his community. It is also a means of family identity. For this reason, dispersal of Hispanic family groups, as a result of post-war urbanization, has created some real land problems for New Mexico. In reference to this, Nancie L. Gonzalez observes:

> "Atencio has recently denoted the disorganization and dispersal of the extended family as a major problem in connection with the efficient use of much of the land in the northern part of the state. Many individuals have retained title to small portions of family land, which they apparently cling to for sentimental reasons." [1]

Like the Indian treatment of land, Hispanic treatment of land is very much a part of the interworkings of his social institutions. However, unlike the Indians, Hispanic consciousness of land is focused on individual property as opposed to nature and the landscape in general. Where Indian reaction to land has conceptual manifestations, the Hispanic's has physical manifestations, such as legal and material property boundaries. Subdivision of land among family heirs was recognizable over time by the physical definition of succesively smaller strips of property. Because land is so associated with family identity, the traditional Hispanic inheritance practice has been to equally apportion property among each surviving son. Thus, large parcels lying between the vital river

---

1. Gonzalez, Nancie L., The Spanish-Americans of New Mexico: A Heritage of Pride, Albuquerque, University of New Mexico, 1967, p. 61.

and irrigation ditch became long, skinny parcels which ultimately constrained cultivation -- forcing it in directions parallel to drainage. This cultivation pattern, in turn, encouraged land erosion and the development of arroyos.

While the regularity of Hispanic fields presents a contrast to the patchwork pattern of Indian people, closer investigation reveals that this apparent regularity is not completely rigid. That is, not all angles are right angles and not all fields are rectangular, but some are narrower at one end than the other. Also, some fields are larger than others. This suggests some degree of incremental adjustment to landscape constraints such as water flow or land obstacles. Therefore, like the Indians, Hispanics reflect some degree of communion with forces of an immediate landscape by adapting to constraints rather than trying to change them. Also, like the Indian, Hispanics used adobe building materials. However, they did not use them with the same implied attitude of subordination. Adobe was used to build the kind of Baroque monuments characteristic of Spain. Thus, it was not meant to be erodable, but reflected a practical assimilation of a cheap building material suitable to this climate.

Figure 14, the final illustration of land patterns, was made from an aerial photograph of Whiterock. Whiterock is an Anglo community built after World War II. Land patterns are characterized by a regular geometry, as similarly noted in reference to Rancho-de-Taos. However, as opposed to Hispanic land patterns, regularity is expressed in regimented terms -- all angles are 90 degrees, and all parcels are the same dimension or multiples of a

unit size. Unlike the Indian field, Whiterock reflects an imposed order over the landscape,and unlike Hispanics, the order has no apparent internal flexibility. There is no individual concession to land constraints but only an individual conformance to a larger planned order.

As described earlier, Hispanic land patterns were traditionally given to change over time as various sons divided the property among themselves. A property was re-aggregated due to marriage between cousins or the dying out of a family line. Thus, the family remained a stable entity,and land allotment changed about it. The Anglo situation is quite opposite in that the family changes, but land allotment remains stable. Thus, Whiterock's allotment pattern suggests that land is transferable -- and as such,a commodity bought and sold by speculators in a land market. Certainly, the West was opened as much by shrewd speculators as by hard working pioneers. Land was not made available by grants from Spain but by the transfer of capital,and the resulting land pattern is one of exact measurement and allocation. Likewise, the people who bought land had no romantic notions about nature but were quick to sell their property once "civilization" caught up with them. As noted earlier, the Dawes Act of 1877 was in many respects an attempt to free more land for speculation. Similarly, the U.S. Court of Private Land Claims had, by 1904, reviewed claims to

Spanish/Mexican landgrants for 35 million acres of New Mexico but only confirmed the validity of slightly more than 2 million acres. [1]

While the Whiterock diagram illustrates conformance of individual parcels to a larger order, the overall plan itself fails to reflect the rigidity of its individual elements.

The overall plan assumes a very ungeometric form, not unlike the circular shapes of Indian fields. Thus, where Hispanic land allotment reflected incremental flexibility, the Anglo pattern suggests flexibility only in the total plan. In other words, the plan itself is adapted to some immediate landscape constraints, and the division of property within it is a maximization of space division under those constraints. Further, Whiterock's pattern of clearly definable boundaries assumes the identity of a legal entity, endowed with rights comparable to those of an individual, and these boundaries define a territory which separates outside from inside -- city authority from county or state authority -- town from country -- settlement from wilderness. Thus, it seems that consciousness of surroundings is focused primarily on an immediate landscape similar to that of Hispanics, instead of sacred mountains on the distant horizon. Also, it appears that land influences the institutional reality of Anglo society, that is, legal and

---

1. Pettitt, Roland A., Los Alamos Before the Dawn, Los Alamos, Pajarito Publications, 1972, p. 37.

economic institutions. The influence of land on social institutions is a trait shared by Anglo, Hispanic and Indian -- even though the institutions themselves vary. Finally, the Anglo differs from both the Hispanic and Indian in his view of unused land as surplus land rather than simply nature. As surplus land there is a compulsion to make use of it -- a conviction that even building a road on it is better than leaving it as is. Even after claiming large areas as National Forests, the administering agency (National Forest Service) manages their trust under a multi-use philosophy.

2. Spatial Organization:

> "The Pueblo Indian Plaza has no parallel in the western world. The plaza may be ill defined topographically speaking, (but) it seems to have a very well defined religious purpose." [1]

This observation by J.B. Jackson suggests that the Pueblo plaza is not so much a device for spatial organization as it is a religious form. Following this same rationale, Alfonso Ortiz describes the "Sipapu" (sacred shrine center) in San Juan Pueblos' main dance plaza (behind the old chapel) as the "Earth mother earth navel middle place " (Nan echu kwi sipu pingeh). As "earth navel" is also used in reference to sacred shrines (ceremonial center) on distant mountains, the "earth navel middle place" becomes the "center of centers" or "navel of navels." It is the sacred center of the village -- the point where ritual dances are initiated.

---

1. Jackson, J.B. "Pueblo Architecture and Our Own," Landscapes, 3:2, 1953, p. 24.

> I might go a little further and say that this is the center of centers or the navel of navels ... Whereas the mountain earth navels are open in only one direction, the mother earth navel is open in all four directions for here the village exists all around it ... But while the mother earth navel is a sacred center like the others, it is also a condensation of the others ... The mountain earth navels gather in blessings from all around and direct them inward toward the village; the mother earth navel is the source of all these blessings, so they are directed outward in all directions. By the system of ideas at work here, everything good and desirable stays within the Tewa World." [1]

However, even a casual tour of San Juan reveals that the "earth navel middle place" does not occupy the geometric center of this settlement -- it lies on the south edge of the main dance plaza. Thus, San Juan's "earth navel middle place" does not lie at the crossing of village center lines but at the confluence of cosmological forces. Like J.B. Jackson's observation of dance plazas, the Sipapu may be ill defined topographically, but it seems to have a very well defined religious purpose.

From these two examples, it seems logical to conclude that spatial organization is not so much the product of a preconceived inter-relationship of settlement components but largely a circumstance resulting from the aggregation of components -- each bearing an independent relationship to its cosmos. That is, the settlement is a collection of mandatory parts and the placement of each part follows ceremonial tradition which, in turn, sets it somewhat independent from adjacent parts. Thus, the

---

1. Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming in a Pueblo Society: Chicago, The University of Chicago Press, 1969, pp. 21 and 22.

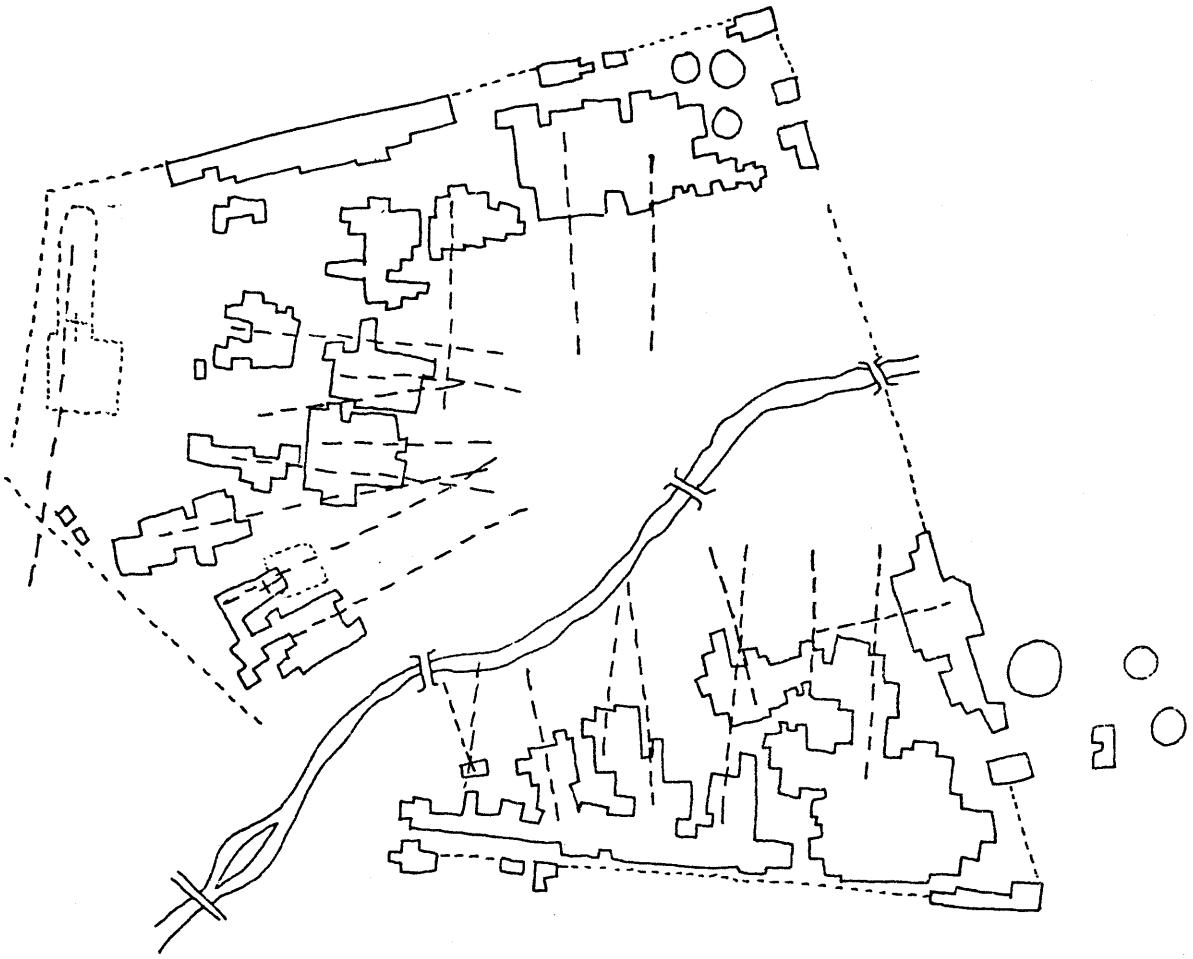
"center of centers" behind San Juan's old chapel is not, in Anglo scientific/ mathematical terms, the geometric village center, or even the valley center, it is the center of a meta-physical plane bounded by sacred phenomena. By this understanding, internal spatial organization can not be separated from the the totality of a cosmos -- the settlement and wilderness are one. This reinforces not only Scully's earlier observation about Indians and nature but also Ortiz's comment about the equal importance of center and periphery.

Perhaps this is most dramatically illustrated by the plan of Taos Pueblo [1] (Figure 15). Here, an internal inter-relationship of parts is hard, if not impossible, to explain in geometric or compositional terms. Axial lines of construction do not form a coherent pattern when view is confined to the structures themselves. Therefore, like the "mother earth navel" of San Juan, internal organization of space must be viewed as an extension of connections to an external cosmos. Further, the crossing and tangling of building lines implies that these connections may vary for individual sets of structures. Thus, the house structures, kivas, plaza, sipapu, and other Pueblo components may be situated in a loose framework of functional juxtaposition but to a large extent, each is an independent

---

1. Stubbs, Stanley A., Birds'-Eye View of the Pueblos, Norman, University of Oklahoma Press, 1950, p. 25.

figure 15



plan of Taos pueblo with building alignments

manifestation or fulfillment of cosmological force, and these forces come together to form a settlement. In light of this, the principals of spatial organization lie in an understanding of the total landscape significant to the Indian.

In contrast to the Indian's idea of spatial organization, Spanish colonials brought with them a planning approach rooted in the Renaissance and Baroque traditions of Europe. Emerging from the incremental chaos of a Medieval era, Europe was in the process of re-structuring its urban centers along organizational principles of strong axiality and the definition of centers by lines of movement.[1] Inasmuch as 16th century concepts of geometrical planning were an outgrowth of designs for military outposts, the distant frontier of New Spain would seemingly be a strong hold of such ideas. In fact "extensive and precise" laws were formulated concerning the layout of new towns throughout Spain's empire. As outlined by Marc Simmons, these laws required that:

> "Municipal planning was to follow the grid system, which required straight parallel streets, with rectangular blocks and one or more rectangular plazas, the principal one being designated the plaza major." [2]

---

1. Zucker, Paul, Town Square from Agora to Village Green, Cambridge: MIT Press, 1970, p. 9.
2. Simmons, Marc, "Settlement Patterns and Village Plans in Colonial New Mexico," Journal of the West, Vol. VIII, No. 1, January 1969, p. 8.

However, despite the clarity of these specifications, settlers on the New Mexico frontier resisted overt conformance with them. Marc Simmons goes on to say:

> "A recurrent theme in official reports of the colonial years centered upon the problems raised by dispersal of the New Mexican population and the need to consolidate for defense. As early as 1609, the people of New Mexico were described as being 'scattered over (that country) so that they are destitute of administration because very few reside in each place...' critics of the dispersal pattern claimed that the obstinacy and inertia of the colonists were the principal barriers to fulfillment of numerous government orders regarding establishment of organized communities." [1]

To some extent, the unique requirements of agriculture, previously described, were responsible for this circumstance -- this seeming departure from long standing and legislated tradition. However, it does not seem sufficient to explain why people, accustomed to community living would sever themselves from time honored standards of survival and cultural identity in a hostile and unknown land.

It seems more likely that Spanish colonials, isolated on a wilderness frontier, clung to those physical vestiges of their homeland, just as English colonials of the Atlantic seaboard did, and reinterpreted them in a new landscape. In so doing, what was recognizable and reassuring to the settlers, remained incomprehensible to crown emmissaries. Organization of space in conformance with

---

1. Simmons, Marc, "Settlement Patterns and Village Plans in New Mexico," from Journal of the West, Vol. VIII, No. 1, January 1969, p.8.

axial and hierarchial principles took a different manifestation. Instead of replicating Renaissance, or Baroque spaces of Europe, the principles of geometric planning were applied to the constraints of a new environment, there giving rise to a new form along old lines. Vincent Scully cites the kind of impact this new environment continues to have:

> "They (Truchas Peaks) are savage horns of power. The modern Spanish tough Penitente Truchas, lies just under them on the height and is stunned, barbarized by them ... It (Tsi-mayo hill) is the perfect truncated pyramid which rises above the Christian Santuario at Chimayo, which is now as it was then a place of medicinal earth and healing. When the horns of the sacred mountain (Truchas Peaks) rise, as they do here above the sacred cone (Tsi-Mayo hill) we are at Knossos, Phaistos, Mycenae, Eleusis and Athens ..." [1]

Scully is concuring that in this non-urban setting, principles previously used to establish inter-relationships between buildings are influenced by significant land forms. For this reason, the church at Truchas village , aligns axially with Truchas Peak. The organizing principle of the Hispanic town is not an imaginary line but a tangible bench mark. Thus, the allotment of property along a river requires internal flexibility of the land grid as previously described, but it never loses its overall character of geometry and order. Villages which developed plazas, such as Trampas,never developed an internal

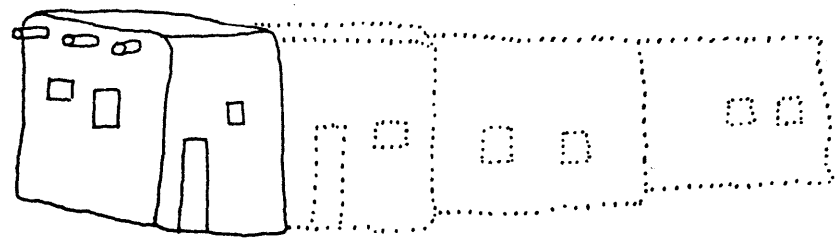
---

1. Scully, Vincent, Pueblo-Mountain, Village, Dance, New York: Viking Press, 1972, p. 101.

geometry independent of influencing land features despite a form more reminiscent of old Spain. The church at Trampas does not bear a right angle relationship with other buildings along the plaza. Also, plaza space itself is not square. Yet, as will be presented in later analysis, the plaza is parallel to natural lines. Therefore, where the Indian Pueblo is characterized by a rough framework of functional juxtaposition but a general independence of component parts (the rationale for spatial organization is ritualistic instead of geometric), the Hispanic village is characterized by a functional independence of parts but a pervailing order. In this way, organization of space is based on the inter-relationship of parts -- principles of organization, rather than geometric perfection. This is best illustrated by the traditional Hispanic house form -- the additive house. (See Figure 16.) Here, the room as a basic unit is used like a building block. As the family grows, another room is added but always added in a linear fashion and consequently the whole remains infinitely expandable. The order of this plan is not an internal symmetry (the impact of Renaissance thought on European house types) but a principle of organization -- a principle derived from homeland traditions but well-suited to survival in an unyielding landscape. Thus, like the Indian Pueblo, components of the Hispanic settlement are, within certain limitations,

figure 16

additive house



original house

additions

independent, but overall organization of space is not the collective result of incremental decision. Principles of inter-relationship set the limits of incremental action and spatial organization is characterized by this inter-relationship of parts.

> "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." 1

This observation by J.B. Jackson, neatly summarizes Anglo concepts of spatial organization in contrast to the Hispanic. As he suggests, the emphasis is on house -- totality of plan. Thus, there exists a subordination of internal parts to an overall town layout as previously noted in reference to Whiterock's land allotment pattern. When New Mexico came under U.S. control (1847), Greek Revival architecture had permeated every level of North American society. This was an architectural style which set out to package diverse functional needs of an industrial nation in the spatial envelope of a Greek Temple. So attractive was this approach to the Anglo consciousness that subsequent eras of architectural thought were in essence attempts at architectural reformation -- calls to free space locked in an imposed order. However, despite the impressive names of these zealots -- Andrew Jackson Downing, Frederick Law Olmstead, John Ruskin and others -- American love of the grid, central axis and symmetrical balance was never displaced. In New Mexico, this delight in Greek Revival assumed a popular form known as the Territorial Style. [2]

---

1. Jackson, J.B., "First Comes the House", Landscapes, Vol. 9, No. 2, 1959, p. 26.
2. Bunting, Bainbridge, Early Architecture in New Mexico, Albuquerque: University of New Mexico Press, 1976, p. 88.

The Anglo's organization of space is characterized by a subordination of internal arrangement to a concept of total form -- this extends from the house, (earlier recognized by J.B. Jackson) all the way to town planning which Vincent Scully describes as "an order made up of self-sufficient individual units ... fixed and complete." [1] The Indian concept of total form is expressed by his definition of a ritual world whereas the Anglo concept of total form is expressed by a geometric ideal. Thus, the Greek Temple is a total concept -- a total set of internal balances which stand alone, and alteration of the temple itself cannot be made without an alteration of concept. The grid plan is also a geometric ideal and characterizes the subdivision of a tract into the maximum number of equally accessible sub-units,and Vincent Scully further observes,

> "Even the map of the United States turns into stricter rectangles as it crosses the Mississippi and one perfect right angle where four states meet falls right by Mesa Verde ... the meeting of Colorado, New Mexico, Utah and Arizona ..(It is) a fine surrealist landscape in which Renaissance energy, which discovered the continent, here lays claim, through the grid, to its archaic vastness." [2]

The gridded town and Pueblo village share an interesting commonality. That is, both are based on the egalitarian status of sub-units.

---

1. Scully, Vincent, American Architecture and Urbanism, N.Y., Praeger Publishing Co., 1976, Fig. 41.
2. Scully, Vincent, American Architecture and Urbanism, N.Y., Praeger Publishing Co., 1976, p. 79.

For Taos, this unit is the cell-like room which forms a multi-storied house block about the dance plaza. For Whiterock, it is the 50 by 100 foot lot which forms a graceful grid of intersecting streets. The undulating form of this grid suggests that internal geometries are maintained,but the total concept is responding to a different rationale. A rationale which, as seen in Hispanic settlements, compromised with an inflexible landscape.

3. Social Organization:

> "The important socio-political and ceremonial organization of Tanoans generally (language group dominating the study area)... is the dual division of the society, usually referred to as a moiety ." [1]

This observation by anthropologist Edward Dozier reveals the nature of social grouping among Pueblo people, Alfonso Ortiz, making reference to this statement suggests:

> "What this statement tells us, briefly, is that the moieties and the associated tendency to think in dualistically contrasting sets are basic to understanding the Tewa (Indian group). Yet no one has ever made them the focal point of analysis in the many studies that have been carried out among the Tewa since the turn of the century." [2]

Ortiz defines his concept of culture sub-groupings as institutions with "associated symbols, ideas and meanings in terms of which social interaction takes place." And certainly, as Ortiz's study documents, moieties serve just such a purpose in Tanoan society. Thus moieties, serve as a framework for organization of

---

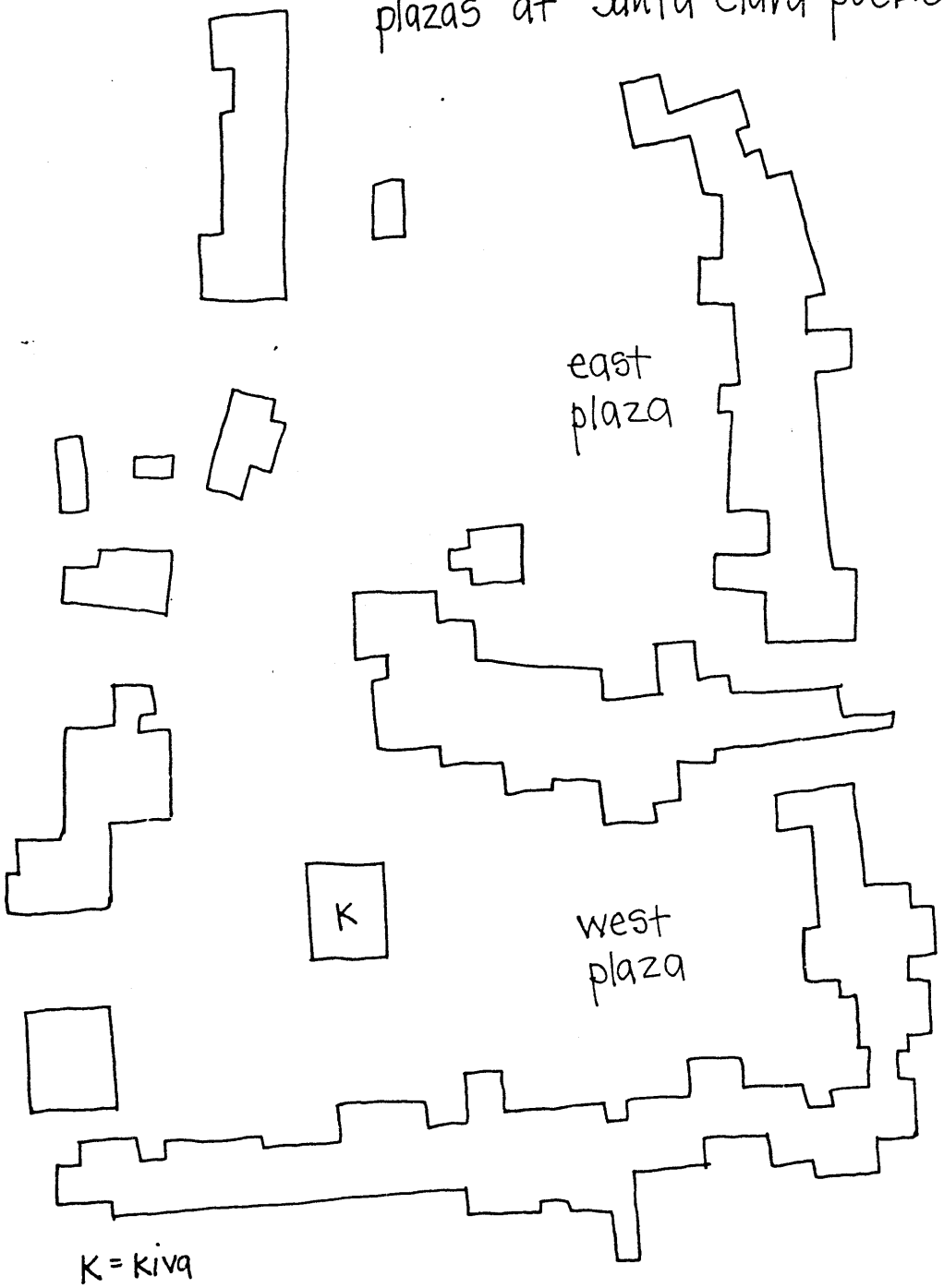
1. Dozier, Edward, The Pueblo Indians of North America, Dallas, Texas, Holt, Rinehart, Winston, Inc., 1970, p. 107.
2. Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming in a Pueblo Society, Chicago, The University of Chicago Press, 1969, p. 4.

social, ceremonial and political activities and, like other aspects of Indian culture, are strongly influenced by conceptual associations with a distant landscape. The Tewa myth of origin presents an explanation for the existance of moieties and an identification of their division with summer and winter people. Therefore, moieties are not only given a separate identity but represent different realms of activity and thereby different ceremonial/political responsiblity and function. However, Ortiz cautions against the interpretation of their dualism as implying a severability of social groups and identifies in his work, many mediations that exist between them at various points in time.

Given the ritual significance of moiety groups as well as their "associated symbols, ideas and meanings" and the ritual rationale of spatial organization, it seems reasonable that this duality would find spatial expression in Pueblo villages. In fact, the earlier illustration of Taos Pueblo displayed a plaza defined by dual clusters of buildings -- not by a continuous building line. Likewise, Santa Clara has two clearly definable plazas (Figure 17). Separation of these plazas is reinforced by ceremonial dance circuits. On Santa Clara's feast day, we observed both a corn dance and a harvest dance -- performed, according to members of the Pueblo, by separate societies.

figure 17

plazas at Santa Clara pueblo



The Corn Dance started from the West Plaza and ended in the East, whereas the Harvest Dance started from the East Plaza and ended in the West. Finally, the strength of this dual identity is revealed in this observation by one of Alfonso Ortiz's informants:

> "In the very beginning, we were one people. Then we divided into Summer people and Winter people; in the end, we came together again as we are today. But you see we are still Summer and Winter people." [1]

Using the previous understanding of cultural subgrouping (social entities with "associated symbols, ideas and meanings in terms of which social interaction takes place"), Hispanic people present a sharp contrast to the Indian. Previous discussions of land allotment patterns and J.B. Jackson's discussion of the additive house, strongly suggest that this social group is the extended family. However, in an age of increasing urbanization, this social group has been strained by economic pressures for family dispersal. Gideon Sjoberg,in his study of Hispanics in a suburban section of Albuquerque,states that "the extended family is no longer the basic unit of economic protection," but he also points out that an informal system of reciprocity among family members still persisted. [2] Unlike Albuquerque , Hispanic villages of the study area are largely buffered from the influences of urbanization by physical isolation and a basically agrarian

---

1. Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming Pueblo Society, Chicago, The University of Chicago Press, 1969, p. 16.
2. (Cited in) Gonzalez, Nancie L., The Spanish-Americans of New Mexico: A Heritage of Pride, Albuquerque: University of New Mexico, 1967, p. 62.

economy. Robert Hurt gives some indication of the stability of extended family groups, based on his investigation of a northern Hispanic village:

> "The household and family institutions show the least amount of disintegration of various aspects of this culture. Orphans, unmarried children, and older people without income are taken care of by attachment to functioning households" [1]

Cundiyo village, located along the Santa Cruz river (east of Chimayo), is an extreme case in point. According to Alice Bullock's summary of Hispanic mountain villages:

> " ... the entire population of 25 families carries the name Vigil ... the land has been divided so many times, through the generations that no one individual owns much, but it is still all Vigil owned ... for this is and will remain the village of Vigils. It isn't like one big family, it is one family which gets along well together and with the world outside." [2]

The above example portrays Cundiyo village as a family territory much like earlier discussions of land subdivision and Atencio's observed reluctance of family members to part with land claims despite physical dispersal of the family group.

Finally, Nancie Gonzalez, summarizing sociological studies on this topic concludes:

> "Studies in both rural and urban areas of New Mexico indicate that most social intercourse occurs among relatives. Loomis, in 1940, described the informal groupings in a rual village: The extended family proved to be the most important unit in such areas as economic cooperation and recreation. It has

---

1. (Cited in) Gonzalez, Nancie L., The Spanish-Americans of New Mexico: A Heritage of Pride, Albuquerque: University of New Mexico Press, 1967, p. 61.
2. Bullock, Alice, Mountain Villages, Santa Fe, Sunstone Press, 1973, p. 18.

repeatedly been mentioned as a primary agent of socialization and social control." [1]

Nancie Gonzalez further summarizes her observation of the Hispanic extended family by making a comparison with Anglo people. She states that the "extended family unit remains important in ways unparalleled in the Anglo world." It is, after all, the Anglo world which has been straining traditional Hispanic social grouping and the direction of change is illustrative of social groups characteristic of Anglo society. Such social groups would center about the economic independence of nuclear families in an urban setting. Thus, land distribution patterns of Whiterock remain static as the family changes, and each cell is independent of the other. Independence is manifest by a house-to-house duplication of lawnmowers, tools, automobiles, recreation equipment, etc., which support activity separate of one's neighbor. Contrasting this type of social grouping with Indian society, Edward Dozier comments:

> "It is clear that western Pueblo social organization is based on unilateral decent and the social structures given prominence in Hano life are unilateral organizations. The nuclear family, which is the basic family type in American society, is a temporary unit among the western Pueblos and the result of acculturation to white American influences." [2]

Although in many respects recent openness of the job market

---

1. Gonzalez, Nancie, The Spanish-Americans of New Mexico: A Heritage of Pride, Albuquerque, University of New Mexico Press, 1967, p. 60.
2. Dozier, Edward, The Pueblo Indians of North America, Dallas: Holt, Rinehart, Winston, Inc., 1970, p. 136.

to women and youth has even strained solidarity of the nuclear family -- Whiterock remains a community of specialized job skills related to Los Alamos. Thus it remains buffered from employment trends which elsewhere are giving rise to new social groupings.

THE REFERENCE FRAMEWORK

Founded on this understanding of Indian, Hispanic, and Anglo cultures, the matrix in Figure 18 summarizes key points of distinction for each. These in turn provide a basis for determining what dimensions of the built and natural environment would be likely to interact in a landscape/builtscape relationship. Testing of the structural theme presented in Chapter I demonstrated that cultural understanding was necessary to understand different forms of Indian and Hispanic towns in the "Valley Bottoms" district. Analysis of these settlements revealed that not only different scales of landscape were being interacted with but also that landscape/builtscape relationships were expressed in different conceptual and structural manifestations. Determination of both physical manifestation and landscape consciousness were rationalized from cultural differences as inherently expressed in the previous settlement typology. Therefore, this chapter, in response to a demonstrated need for cultural understanding has clarified cultural distinctions in areas most relevant to subsequent detailed analysis. These cultural distinctions imply reference points from which to view landscape/builtscape interaction. These reference points are:

figure 18

Reference Framework Matrix

culture group	reference points	key characteristics	likely landscape and landscape reponse
Indian	• scale of consciousness	• expansive landscape consciousness	• distant land forms
	• scale of activity	• pedestrian scale	• public space (street/plaza) & building articulation
	• scale of manipulation	• organization of space by individual autonomous parts	• view parts separately
	• scale of expression	• moiety action	• physical dualities
Hispanic	• scale of consciousness	• immediate landscape consciousness	• close landforms
	• scale of activity	• pedestrian scale	• public space (street/plaza) & building articulation
	• scale of manipulation	• organization of space by inter-relationship of parts	• view parts jointly and their inter-relationship
	• scale of expression	• extended family action	• autonomous group expression
Anglo	• scale of consciousness	• immediate landscape consciousness	• close landforms
	• scale of activity	• automobile scale	• street and building patterns
	• scale of manipulation	• organization of space shaped by overall concept	• view total settlement form
	• scale of expression	• nuclear family action	• autonomous individual expression

1. Scale of consciousness -- The dimension of landscape being interacted with -- i.e., a distant versus immediate landscape.

2. Scale of expression -- The characteristic magnitude of group action -- i.e., familial versus societal expression.

3. Scale of manipulation -- The likely dimension of built response to landscape -- i.e., the total plan versus its component parts.

4. Scale of activity -- Activity accomodated by the built environment -- i.e., automobile versus pedestrian scale environment.

Figure 18 summarizes cultural characteristics in these four categories, based on a distillation of the previous discussion. The third column identifies dimensions of the built environment most likely influenced by cultural characteristics and thereby, most likely influenced by the culture's perception of a natural setting. Consequently, column three also begins to suggest how the reference framework can be incorporated into our study methodology. Specifically, items from column three become incorporated into two areas of the study methodology:

A. The field survey -- Cultural insights suggest a descriptive vocabulary for natural and built settings and presentation of that vocabulary in graphic form.

B. Analysis of field data -- A matrix format is used to

distill field observations to a vocabulary of structural/conceptual landscape linkages (Landscape/Builtscape matrices of Chapter III). In these matrices, landscape and builtscape variables are reconciled to each other on the basis of whether a structural or conceptual connection (defined in Introduction, p. 24) exists between them. Cultural insights discussed in the reference framework provide a basis for such determination.

The next chapter documents collection and analysis of field data as well as formulation of a landscape linkage vocabulary and illustrates employment of the reference framework in this process. Finally, Chapter IV presents a subjection of this vocabulary to the first of our three testing procedures -- that is the test of cross-cultural continuity.

CHAPTER III

INDIAN AND HISPANIC TEST SITES

Figure 19 is an illustration of a typical landscape documentation map as drawn in the field. Its structure is an outgrowth of "Scale of Consciousness" as identified in the previous reference framework. Essentially "Scales of Consciousness" are represented by the use of concentric rings which identify perceptual dimensions of the landscape (see Figure 19). For this reason landscape maps are called "Sacred Circle diagrams." The range of landscape conceptualized within the Indian culture would, in most instances, fall within or on the second and third ring while that of the Hispanic culture would fall within or on the first and second ring. The rings represent cognitive zones not distances in the strictest sense, as distances in such a mountainous landscape are irrelevant. Because of the immense scale of landforms, measured distance does not correspond with perceptual distance. It is common that a visitor to New Mexico will estimate that a mountain is two miles away when in fact it may be 10 to 15 miles away. In order to calibrate the distance of these rings without using conventional measures, the "Sacred Circles" are supplemented by what we call a "viewer dial." (center of Figure 19).

The "viewer dial" has three component parts as illustrated in Figure 20. The first component is a measure of perceptual size -- using an arc method which measures angle of vision relative to eye level. If something is large, one will have to

figure 19

Sacred circle map

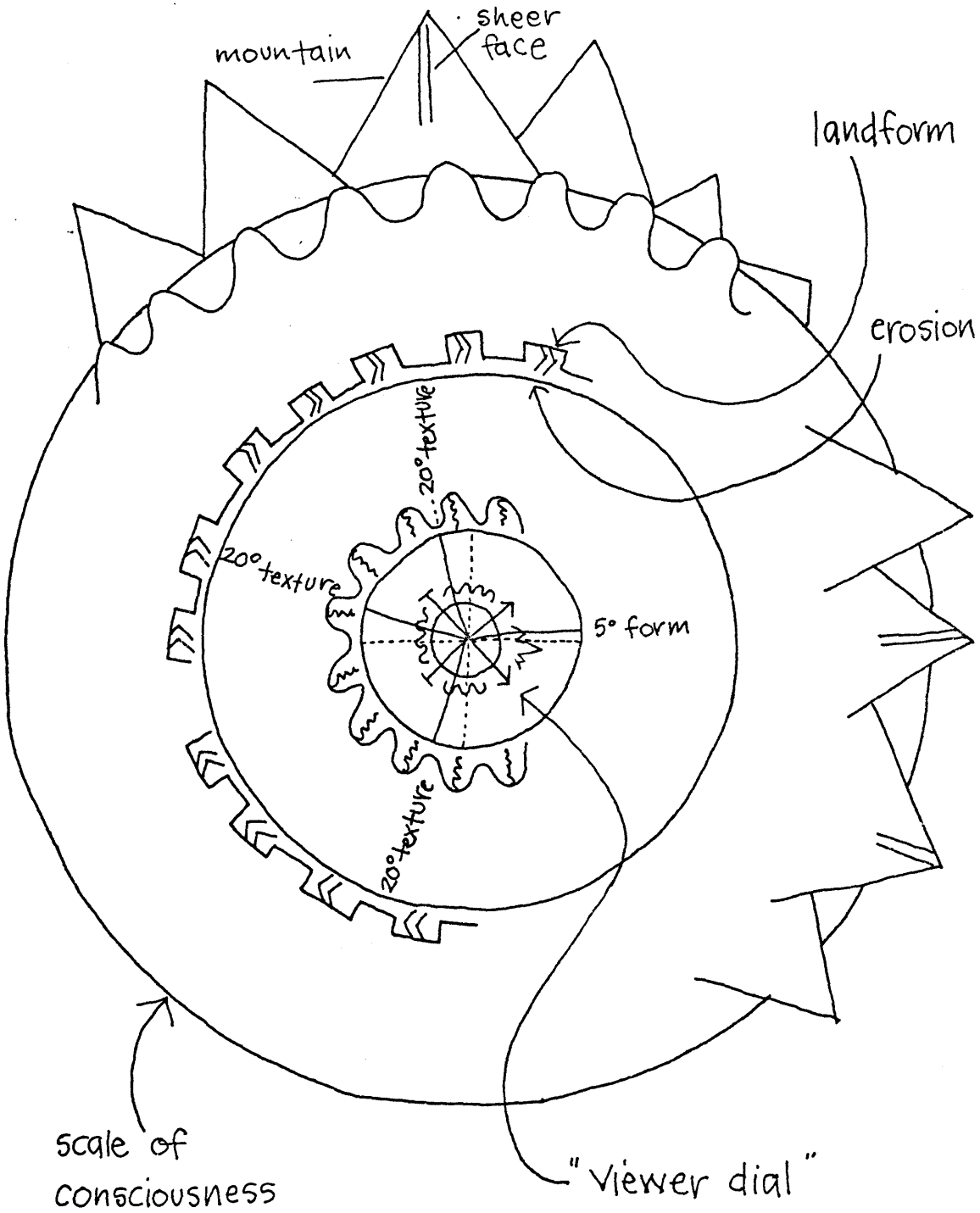
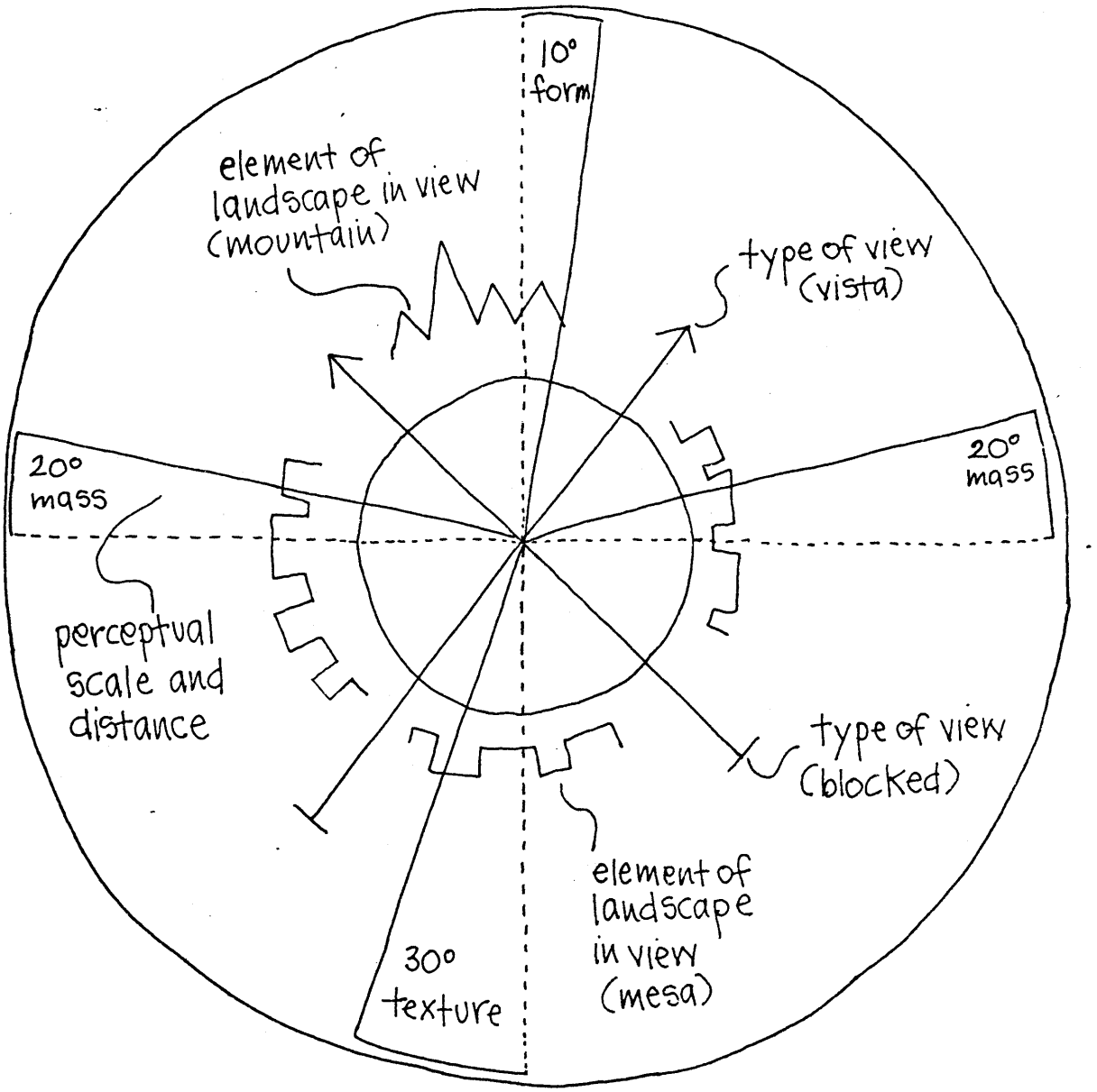


figure 20
the "viewer dial"



look up at it, hence the arc will be 25 to 30 degrees above eye level -- if the opposite is true, little eye level adjustment will be necessary. However, a distant mountain may not register much eyelevel adjustment -- neither will a small hill in the foreground. Therefore, some additional information is required to convey an object's visual presence,and the second viewer dial element is intended to achieve this. Each arc measure is followed by the word "form," "mass," or "texture" which is a means of describing sensory involvement with an object. Something far away will be perceived as a form only -- typically, a distant mountain is little more than a blue-gray silouette. If something is closer, one can detect its subsequent massing -- the mountain's peaks and ridges will be visible. Finally, when very close, one can detect the mountain's surface textures. Therefore, an object described as 30 degree texture would be an extremely close and imposing element to the viewer. The viewer dial's third element is a diagram which indicates what is visible. A 360 degree view is divided into four quadrants,and within each quadrant is a symbol which corresponds with some symbol on the circles themselves. This symbol, part of the landform vocabulary, is one's limit of vision -- the visual terminus in that direction. For example, a symbol within the viewer dial which corresponds to a symbol on the first

ring means that views beyond the first ring are blocked. To emphasize the sense of visual expanse or enclosure implied by these views, quadrant lines are terminated by arrowheads (meaning vista/panorama) or "T" marks (meaning view is cut off).

Further documentation of the landscape is facilitated by a symbol vocabulary (Figure 21). Each lineal symbol represents a characteristic landform and added to it are other sub-symbols which identify the extent and nature of erosion. Depending on the syntax used in combining symbols, they collectively convey a setting's geologic form. For example, the zig-zag line with straight streamers (in Figure 19) would convey a sheer faced mountain.

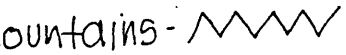
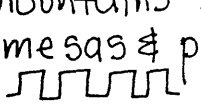
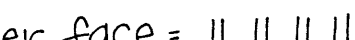
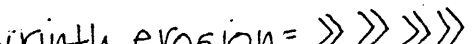
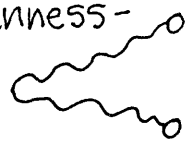
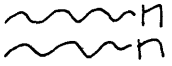
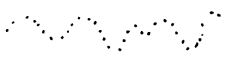
Finally, landscape documentation is accompanied by a landscape commentary which further qualifies significant characteristics not illustrated by the map itself. For example, this may include the direction of visual orientation to a particular point as a result of overpowering hierarchy in the landmassing or a sense of void in one direction rendered by visual oppression in another.

Sacred Circle diagrams, constructed from field observation of the setting in question, are complemented by a number of other data sources which balance this qualitative assessment. These other data sources include: (a) USGS quadrant maps;

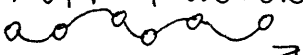
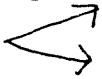
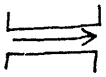
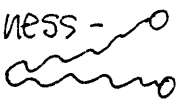
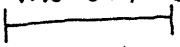
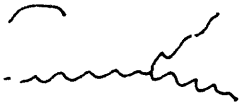
figure 21

symbol vocabulary

landscape symbols

1. mountains - 
2. mesas & plateau edges - 
3. hills - 
4. sheer face = 
5. labyrinth erosion = 
6. soft erosion = 
7. vista - 
8. focused view - 
9. sense of openness - 
10. dominating landforms - 
11. gap or break - 
12. sound - 
13. river - 
14. landmark landform - 

builtscape symbols

1. edge defined by shared building line - 
2. diffuse development - 
3. edge defined by dense cluster of development 
4. vista view - 
5. focused view - 
6. sense of openness - 
7. point of confluence - (movement and/or drainage) 
8. break or gap -
9. monolithic, unbroken, frontage - 
10. sound - 
11. labyrinth of built corridors - 
12. entry - 
13. drainage - 
14. up slope - 
15. dance route - 

(b) aerial photographs; (c) geologic profile maps from the bureau of Mines and Mineral Resources; (d) State Agriculture Department vegetation zone maps; (e) climatic maps of rainfall and temperatures; and (f) Hubbard raised relief maps.

Inasmuch as the purpose of this field work is to establish connections between built and natural settings, it seems necessary to convey description of them in similar terminologies. Thus, by endeavoring to document landscape and builtscape qualities via a similar means of description, correlations between the two can be better identified -- parallels between the two become more visible. It is, after all, description of both human and white mouse in similar biological terms that makes generalizations from one to the other possible. The same logic is followed here in that our landscape documentation becomes the basis for constructing builtscape documentation. However, where symbols were the main device for recording landscape qualities, commentary is the main device used in built documentation. Issues addressed in the commentary are derived from landscape understanding -- such as visual direction via a hierarchial massing of built forms or sense of enclosure strengthened by visually inpenetrable edges.

While most issues addressed in the builtscape commentary come from landscape understanding, two other sources are also important.

First is the reference framework. Here, additional topics from column two (Figure 18) are incorporated into our field methodology -- such as scale of expression, scale of manipulation and scale of activity. Thereby, when the field team addresses the issue of "sense of enclosure," they will also consider key cultural characteristics associated with the site.

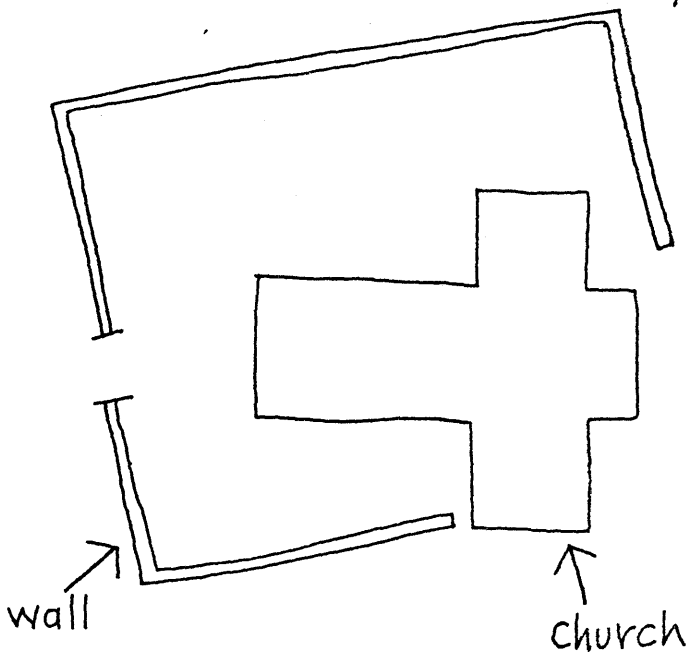
The second source of commentary issues is our observation of ceremonial activities in the test communities, especially Indian Pueblos. For example, on June 23, we observed a Corn Dance at San Juan Pueblo, on July 25, a Corn Dance at Taos Pueblo, and on August 4 a Corn Dance at Santo Domingo. By observing the same dance enacted in different communities, we were able to compare the use of space among various sites and consequently comprehend the internal structure of what would have otherwise remained complex configurations. For example, at Santa Clara, our first attempts to describe its form via our landscape approach made no structural sense as its complex of multiple plaza spaces confused us. However, an understanding of social duality (moieties) as presented in the reference framework and observation of this duality in action in Santa Clara's enactment of the Corn Dance and Harvest Dance resolved our confusion. What we saw as one complex plaza was in fact two plazas -- that is each moiety has its own plaza space,and each plaza has an identical form. (This will be discussed with

more supporting detail later in the chapter.) Thus, Santa Clara is not a complex spatial configuration but a symmetrical duplication of smaller, more simple space.

One other important source of commentary is a relational assumption implied by our hypothesis. The assumption is that symmetry is the logical juxtaposition of built elements given a lack of other determinants. Symmetry is in essence self-explaining. It constitutes a structural whole where each part is equally dependent upon the other. Symmetry is balance and to many cultures, symmetry is sacred. The same thinking can be applied to other geometric expressions which connote order. The assumed, the human tendency is toward logical order -- unless other determinents influence the decision process. For example, the church at Las Trampas does not bear a regular geometric relationship to its surrounding wall (Figure 22). According to our assumption, the church and its wall would normally be parallel unless there was an overpowering reason to rationalize such a deviation. Inasmuch as our hypothesis attests that landscape relationship is such an overpowering reason, field surveyors, when confronted with deviations from logical order made them an issue for commentary.

figure 22

church and wall at Las Trampas



Certain limited aspects of the builtscape survey were standardized into a symbol language (See Figure 21.) which is used to complement the commentary by identifying the building, group of buildings or physical phenomena being discussed. For example, symbols identify various types of views (vista view, focused view) or types of built edges (continuous edge, diffuse edge, contiguous edge). Finally, the actual builtscape survey maps as illustrated on page were drawn from aerial photographs of our test sites and then checked in the field. Builtscape maps are complemented by other data sources such as: (a) aerial photographs; (b) slides; (c) historic and contemporary written descriptions.

The above description summarizes our approach to collection of field data. These field activities provide the informational basis upon which subsequent analysis is built. In review, our data sources are:

A. Landscape Survey

1. Sacred Circles map
2. viewer dial
3. landscape commentary
4. U.S.G.S. Quadrant maps
5. aerial photographs
6. Hubbard raised relief maps
7. geologic profile maps
8. vegetation zone maps

B. Builtscape Survey

1. builtscape maps
2. builtscape commentary
3. aerial photographs
4. slides
5. historic and contemporary description
6. observation of ceremonial and daily activity.

In order that both landscape and builtscape information may be in the same directional context, both sets of field maps are fitted with North arrows -- established as a result of compass readings in the field.

The open-endedness of our field methodology resulted in a sizable amount of descriptive information which remained to be summarized in sets of relevant data points and formulated into landscape/builtscape linkages through some method of systematic comparison. As described earlier (introduction page 24) these linkages will be of a structural or conceptual type -- depending upon the degree of physical contact between landscape and builtscape features. With the distillation of field information into data points (isolation of component landscape/builtscape qualities), it seems that a matrix format would facilitate identification of a structural or conceptual connection between any one field variable and its contrasting set of builtscape or landscape features. The identification of connections and further labeling them as conceptual or structural, is based upon the qualitative dimension of field analysis remaining after landscape/builtscape components have been teased out. Validation of individual determination rests upon the weight of repetition over a total of 15 test sites. Thus, gaps in the built definition of a plaza which directly

align with gaps in the natural definition of its setting are considered a conceptual parallel at one test site -- but a conceptual linkage when repeated at other sites. Also a gap aligned to a certain view is considered a structural parallel at one site but a structural linkage when repeated at other sites. These examples also help to clarify the logic for labeling any two variables as conceptually or structurally related. In order for a conceptual association to be made, there had to exist an exact descriptive parallel between the landscape and builtscape phenomena. For example, the plaza at Taos Pueblo is bisected by a stream. North of this stream and bounding the plaza's northeast edge is a five-story hierarchially massed house block. Parallel to this, Taos Pueblo sits in a valley also bisected by a stream (the same stream). North of this stream and bounding the valley's northeast edge is a hierarchially massed mountain peak. Therefore, a conceptual parallel between the houseblock and mountain is established and further supported by observation of ceremonial activity at Taos as well as repetition at other test sites.

If the houseblock/stream/valley relationship were not indentical to the mountain/stream/valley relationship, a connection between houseblock and mountain would not have been made. This locational parallel is especially dramatic when viewed from

Taos' plaza where the mountain's sheer faced mass rises immediately behind the houseblock.

In order for a structural association to be made, there had to exist some physical interface between a built and landscape phenomenon. For example, a breakdown of Cordova's (test site) rational geometry east of its plaza can be associated with the increasing narrowing of its valley space and resultant convolution of its site. Inasmuch as the breakdown yields to drainage paths and increasing slope conditions, a structural connection between this built feature and site constraints was made.

Thus each test site is summarized by a "landscape/builtscape" matrix where each set of landscape or builtscape variables is reconciled to the other on the basis of a structural or conceptual relationship. The following pages of this chapter present our field surveys (landscape and builtscape mapping) for each test site and its summarizing "landscape/builtscape" matrix. Each site analysis is prefaced by a brief description of its relevant history, particularly if historical writings lend any insight to its present understanding. Also included in the site description is a summary of its strongest landscape response characteristics which are derived from identification of those builtscape variables most densely connected to landscape features. That is,

those builtscape variables which represent the strongest network of landscape relationships. Finally, where observation of ceremonial activity provided some basis for better understanding a site's physical form, we made an effort to describe it in the site summary.

In our previous construction of the methodological framework for this thesis, it was stated that our hypothesis would be subjected to three separate tests:

A. Cross-Cultural continuity test.

B. Temporal continuity test.

C. Differentiation test.

The sites presented in this chapter provide a basis for our "cross-cultural continuity test" actually executed in Chapter IV. In order for the cross-cultural test to have any justifiable results, sites included must be classifiable into culturally exclusive categories. As described in Chapter I, two cultural groups are well represented within the study area -- Hispanic and Indian. Whiterock, the study area's one qualifying Anglo example will be included later as part of another hypothesis test (the differentiation test) as inclusion of it here does not meet the previously described conditions of repetition. Thus, sites presented in this chapter can be classified as either Hispanic or Indian and landscape linkages which are repeated cross-culturally become the basis of our "landscape/builtscape linkage

vocabulary." Therefore, sites selected in Chapter I on the basis of physical criteria must now be further culled, here, on the basis of:

A. cultural distinction -- Is the site identified as Indian or Hispanic?

B. accessibility -- As good field documentation is essential, will the Indian or Hispanic site present unsurmountable problems on the basis of physical or attitudinal accessibility?

Via this method of selection, the previous 20 sites were narrowed to 15 of which seven are Indian Pueblos and eight are Hispanic villages. No site was ruled out on the basis of criteria "B," although we had to borrow a four-wheel drive vehicle more than once.

This chapter serves to summarize the selected test sites. Chapter IV is used to formulate variables identified in these site summaries into a linkage vocabulary based on an understanding of each variable's conceptual/structural landscape connections. Further, Chapter IV traces the cross-cultural repetition of these linkages in accordance with the conditions of our first hypothesis test.

TAOS

Taos, built between 1300 and 1400 AD, is one of the Northern Tewa Pueblos (a branch of the Tanoan language group). Its population of 1,748 [1] is large by Pueblo standards and its people considered conservative. According to Bertha P. Dutton (Indian ethnographer and anthropologist), "the present Taos buildings are not far from those which Hernando de Alvarada saw in 1540." [2] Particularly, these buildings are two multi-storied house blocks which bound a central plaza and are set at the foot of New Mexico's highest mountains.

The form of this Pueblo, which visually echos the dramatic features of its landscape setting, moved Vincent Scully to describe it as, "pyramidally stepped back houseblocks (which) still dance the sacred mountain before its face and receive its sacred waters in the stream between them." [3]

From our observations of the Corn Dance on July 25, 1977, we feel that these two houseblocks are more important (ceremonially) than the central plaza, as dancers danced tightly along the building facade (facing the structures) and in the labyrinth

---

1. Dutton, Bertha, Indians of New Mexico, Tourist Division, Department of Development, New Mexico.

2. Dutton, Bertha, Let's Explore Indian Villages Past and Present, Santa Fe, Museum of New Mexico Press, 1962.

3. Scully, Vincent, American Architecture and Urbanism, New York, Prager, 1969, p. 24.

corridors between them -- not in the plaza's open area. This seemingly implies that houseblock structures have a special significance. Further, when one considers the close proximity of sacred mountains, it seems appropriate that conceptualization of these landforms would yield a more literal manifestation. Thus, where buildings in other pueblos are used to create spatial experiences,, buildings here are used to replicate landforms in themselves. As ceremonial objects they become altar pieces arranged within the space,and it is for this reason, we believe, that Taos surrounds its houseblocks and plaza with a wall. This is the only such wall to exist among Pueblos of the study area, and its low height as well as frequent breaks suggest that it is not a defensive device. Thus the wall seems intended to define a spatial area. Structures are placed within this space, independent in their organization from the wall. Enactment of the Corn Dance in building spaces rather than the plaza space further suggests that the Taos plaza is in many ways a parvis from which to view buildings in their proper relationship to mountain landforms.

These observations are reinforced by Taos' landscape/ builtscape matrix. Here, landscape variables describing the mountains (2,8,9,18) and those describing the stream (4) are most frequently connected (conceptually and structurally) with built features. As the above description suggests, builtscape

variables 12 to 16 which describe component parts of the house blocks represent the densest network of landscape relationships. Builtscape variables 20, 22, 26 describing alignments and orientation in reference to mountains are also densely connected to landscape variables -- as is variable 2, which describes openings for the stream.

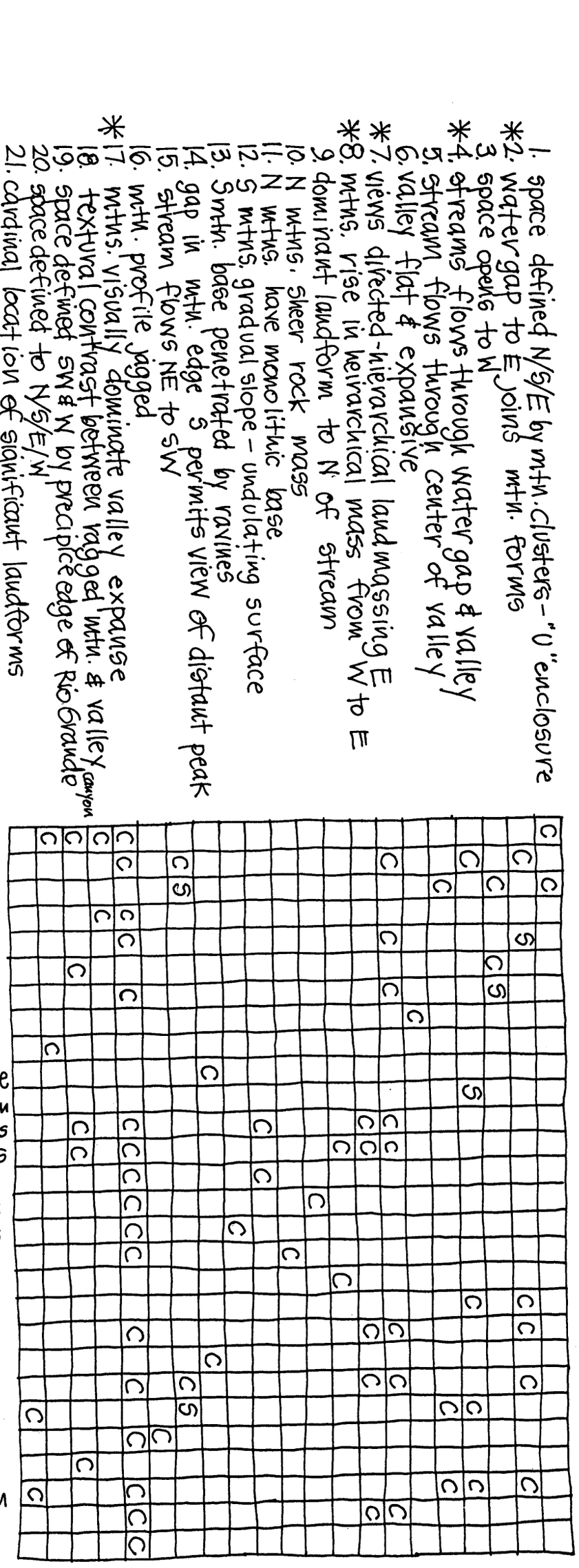
1. space defined N/S/E by mtn. clusters - "U" enclosure
*2. water gap to E joins mtn. forms
3. space opens to W
*4. streams flows through water gap & valley
5. stream flows through center of valley
6. valley flat & expansive
*7. views directed-hierarchical land massing E
*8. mtns. rise in heirarchical mass from W to E
9. dominant landform to N of stream
10. N mtns. sheer rock mass
11. N mtns. have monolithic base
12. S mtns. gradual slope - undulating surface
13. S mtn. base penetrated by ravines
14. gap in mtn. edge S permits view of distant peak
15. stream flows NE to SW
16. mtn. profile jagged
*17. mtns. visually dominate valley expanse
18. textural contrast between ragged mtn. & valley canyon
19. space defined SW & W by precipice edge of Rio Grande
20. space defined to N/S/E/W
21. cardinal location of significant landforms

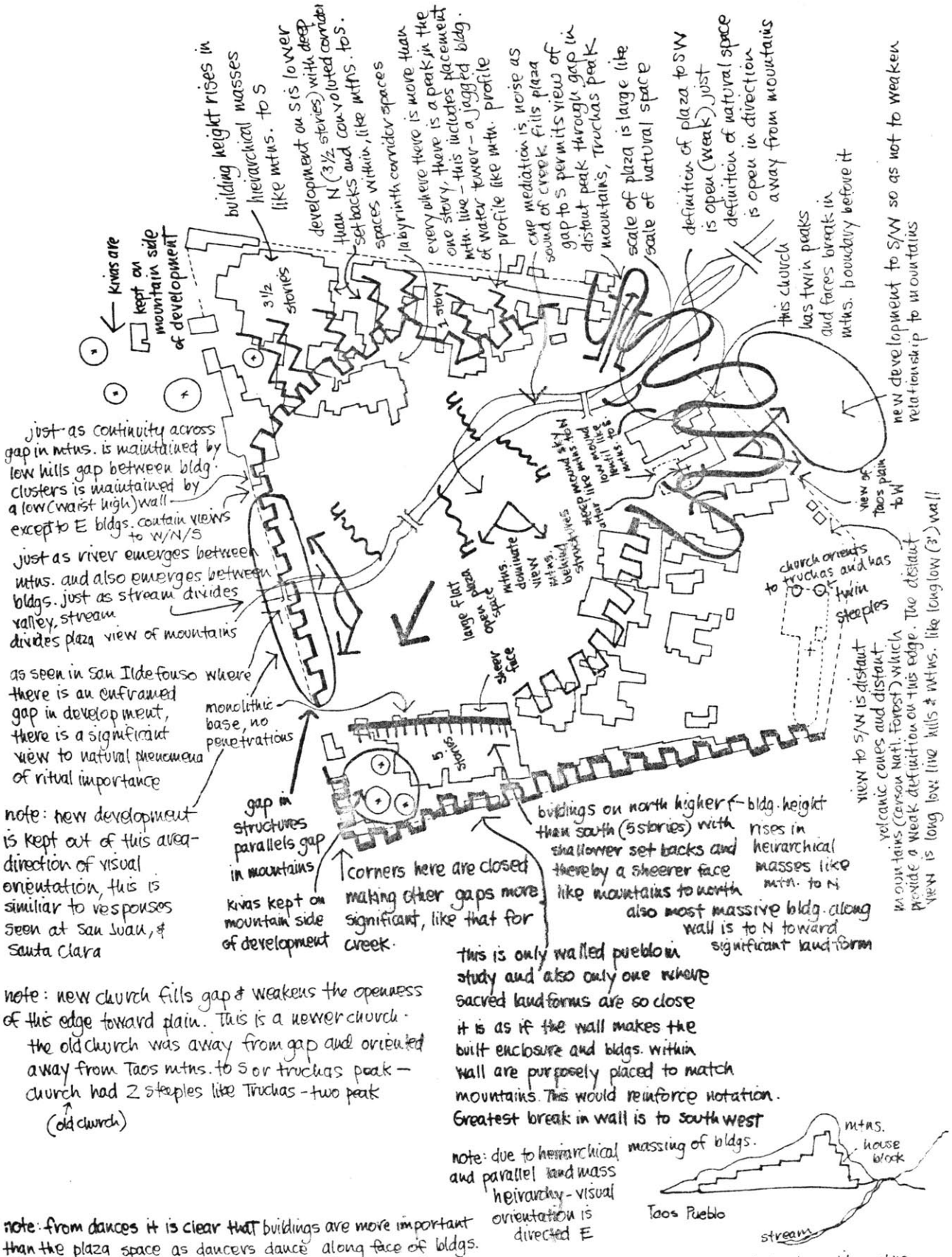
• land scape •

Taos pueblo

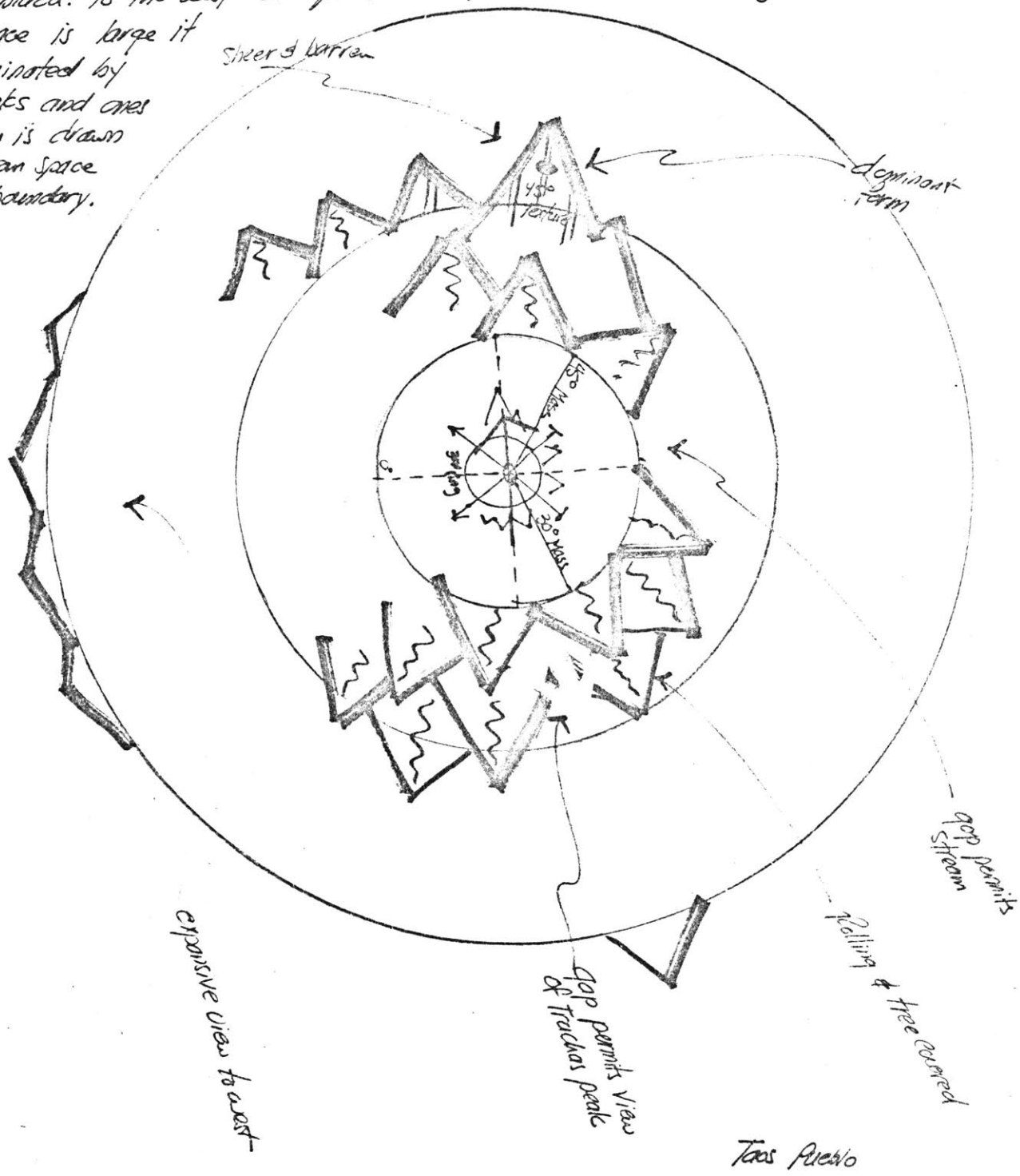
• built scape •

1. wall defines settlement area
*2. enframed opening to E
3. break in edge to SW
4. building alignment independent of wall
5. views directed E
6. diffuse plaza definition to W by buildings
7. extension of development to W
8. large, open flat plaza
9. enclosed central space
10. view of distant peak through gap in S edge
11. sound of stream in plaza - audible connection
*12. S heirarchical bldg. mass, rises E, 1-3½ stories
*13. N heirarchical bldg. mass, rises E, 1-5 stories
*14. S houseblock deep set back for upper stories
*15. N houseblock shallow set back for upper stories
*16. S houseblock penetrated by labyrinth corridors
17. N houseblock monolithic base
18. distribution of mass & height to N of stream
19. low wall bridges enframed gap in NE edge
* 20. placement of Kivas to E
21. old church orients due S
*22. new church orients E
23. stream flows through center of plaza
24. N/S building mass profile jagged
25. continuous definition of wall to W & SW
*26. location of settlement symm. to mtn. & stream
27. containment of views W/N/S
28. N/S houseblocks dominate plaza




kivas are kept on mountain side of development
building height rises in hierarchical masses like mtns. to S
development on S is lower than N (3½ stories) with deep set backs and convoluted corridor spaces within, like mtns. to S.
labyrinth corridor spaces is more than every where there is a peak in the one story, there is a placement mtn. line – this includes placement of water tower – a jagged bldg. profile like mtn. profile
3½ stories
1 story
cup mediation is noise as sound of creek fills plaza
gap to S permits view of distant peak through gap in mountains, Truchas peak
scale of plaza is large like scale of natural space
definition of plaza to SW is open (weak) just definition of natural space is open in direction away from mountains
this church has twin peaks and faces break in mtns. boundary before it
new development to S/W so as not to weaken relationship to mountains
view of Taos plain to W
just as continuity across gap in mtns. is maintained by low hills gap between bldg. clusters is maintained by a low (waist high) wall – except to E bldgs. contain views to W/N/S
just as river emerges between mtns. and also emerges between bldgs. just as stream divides valley, stream divides plaza view of mountains
as seen in San Ildefonso where there is an unframed gap in development, there is a significant view to natural phenomena of ritual importance
monolithic base, no penetrations
note: new development is kept out of this area – direction of visual orientation, this is similiar to responses seen at San Juan, & Santa Clara
large flat plaza open space
mtns. dominate view – mtns. behind structures
steep mound like mtns. rather than low mound like hills
church orients to truchas and has twin steeples
sheer face
5 stories
gap in structures parallels gap in mountains
kivas kept on mountain side of development
corners here are closed making other gaps more significant, like that for creek.
buildings on north higher than south (5 stories) with shallower set backs and thereby a sheerer face like mountains to north
bldg. height rises in heirarchical masses like mtn. to N
also most massive bldg. along wall is to N toward significant landform
view to S/W is distant volcanic cones and distant mountains (Carson Nati. Forest) which provide a weak definition on this edge. The distant view is long low line like hills & mtns. like long low (3') wall
note: new church fills gap & weakens the openness of this edge toward plain. This is a newer church – the old church was away from gap and oriented away from Taos mtns. to S or truchas peak – church had 2 steeples like Truchas – two peak
(old church)
this is only walled pueblo in study and also only one where sacred landforms are so close it is as if the wall makes the built enclosure and bldgs. within wall are purposely placed to match mountains. This would reinforce notation. Greatest break in wall is to south west
note: due to heirarchical and parallel land mass heirarchy – visual orientation is directed E
massing of bldgs.
mtns.
house block
Taos Pueblo
stream
note: from dances it is clear that buildings are more important than the plaza space as dancers dance along face of bldgs. and in labyrinth spaces. This strengthens connection between bldgs. and mountains and that structures replicate form of mountains where in other pueblos the structures are used to model space. This parallels the close proximity of sacred phenomena (mtns.). The space could almost be scaled to view. Buildings in their proper relationship to mountains. One would expect a lot more replication here than mediation. This is reinforced by independence of bldg. alignment from wall – bldgs. align w/ mtns. – wall does not bear this relationship
note: N/S house blocks dominate plaza like mtns. dominate valley
note: wall replicates space and buildings replicate mountains
note: like dominant mountains north of stream, building mass and height are distributed north of stream

- Type of space is enclosed on three sides and dominated by sheer, exposed rock mtn to North. Space is divided by a stream running ~~East~~ West from East - hills to the South are lower and tree covered. Thus space is both enclosed and dominated by mtn. forms. to the west space is open with distant views of plateau and ~~of~~ extinct volcano peaks. West is bounded by distant Mtns ~~of~~ of the range at the 3rd ring
- Scale of space is ~~intimate~~ large and seems mostly filled by the settlement with its large plaza. To the west an open vista expands scale considerably. However, while the space is large it is dominated by mtn. peaks and ones attention is drawn away from space to its boundary.



SANTA CLARA

Santa Clara Pueblo site is estimated to have been inhabited as long ago as the 14th century although archeological evidence is not sufficient for an exact dating.[1] The Santa Clara Indian Reservation was established in 1689 by the Spanish government, and Fray Francisco Dominquez visited the Pueblo in 1776. However, more particular knowledge of physical appearance comes from observations by Adolf Bandelier in the 1880's at which time he described a double quadrangle arrangement of two plazas (Figure 17). This is still the structure of present day Santa Clara. As noted later in reference to San Juan, these plazas are two separate but symmetrical elements not one complex spatial form. Observation of a Corn and Harvest Dance on August 12, 1977 reinforces this conclusion as well as cultural characteristics of social duality described in the reference framework. During our observation of August 12 ceremonies, we noted that dancers of one moiety, performing a Corn Dance, started their procession in the West plaza -- moving slowly eastward to the East plaza. Likewise, dancers of another moiety performing a Harvest Dance moved their procession from a point of origin in the East Plaza -- moving slowly westward to the West Plaza. Opposite but equal

---

1. Stubbs, Stanley A., Birds'-Eye View of the Pueblos, Norman, University of Oklahoma Press, 1950.

duplication of ceremonial dance routes as well as mirror imaging of edge qualities, suggests a conscious duplication of physical space. Thus, structure of the Pueblo relevant to landscape connections becomes consistent with our hypothesis once it is viewed as having duplicate and identical plazas -- instead of one complex plaza.

Both plazas share features of openness to the East and strong definition to the North, West and South as noted by our field survey. Santa Clara's landscape/builtscape matrix identifies openness of the settlement to the East as most significant of built features -- generating the densest network of landscape relationships (landscape variables 1, 2, 3, 4, 11, 18, 20). Likewise, strong natural definition to the North, West, South and spatial openness to the East are land features most influential on settlement form (builtscape variables 3, 5, 6, 7, 13, 14, 15). This landscape/builtscape parallel is also seen at San Juan and San Ildefenso.

Santa Clara people cite Puye' as their ancestrial home -- Puye being the ruin remains of an early pajarito plateau settlement. We visited Puye to see what similarities might exist between present day Santa Clara and this earlier Pueblo. Details of this investigation are presented in the appendix (page 367-369). Three-sided definition of the natural space at Puye' bears some qualitative similarities to Santa Clara's natural setting. Likewise,

built qualities of edge definition to North, West, South and openness to the East were documented at both sites. Puye' was built between 1450 and 1475 and abandoned near the end of the 16th century.[1] This may give some estimate for the founding of Santa Clara Pueblo.

Santa Clara is large among Pueblos of the Rio Grande, with a population of 1,204.[2] This population is growing due to considerable expansion of the settlement north from its old plaza. Growth represents a physical departure from cultural tradition -- that is single-family homes assuming somewhat of a grid relationship. This is primarily a result of income increases derived from employment at nearby Los Alamos scientific laboratories. However, qualities of physical form documented about the plaza are still recognizable here as integrity of the grid relationships,and diversity of houses breaks down toward the East (builtscape variable 13). On the otherhand, grid relationships, density and mass increase toward the West. This parallels the plaza's strong definition to the West and spatial openness to the East. While some recent growth has deviated from traditional form, the plaza area is still in the densest district of residences, and Santa Clara people are known for the strength of their ritual life. Thus, their culture has not been co-opted by Los Alamos.

---

1. Dutton, Bertha, Let's Explore Indian Villages Past and Present, Santa Fe, Museum of New Mexico Press, 1962, p. 56.
2. Dutton, Bertha, Indians of New Mexico, Tourist Division, Department of Development, New Mexico.

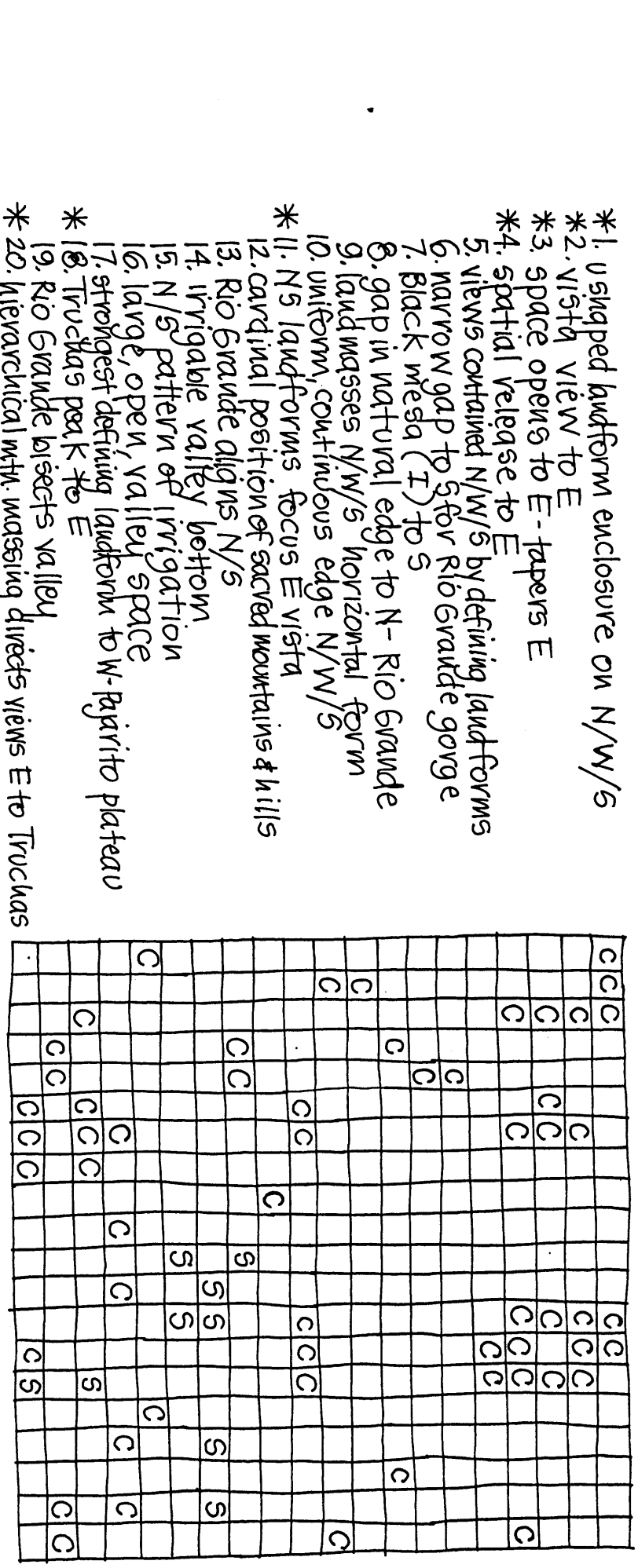
*1. U shaped landform enclosure on N/W/S
*2. vista view to E
*3. space opens to E - tapers E
*4. spatial release to E
5. views contained N/W/S by defining landforms
6. narrow gap to S for Rio Grande gorge
7. Black mesa (I) to S
8. gap in natural edge to N - Rio Grande
9. land masses N/W/S horizontal form
10. uniform, continuous edge N/W/S
*11. NS landforms focus E vista
12. cardinal position of sacred mountains & hills
13. Rio Grande aligns N/S
14. irrigable valley bottom
15. N/S pattern of irrigation
16. large, open, valley space
17. strongest defining landform to W - Pajarito plateau
*18. Truchas peak to E
19. Rio Grande bisects valley
*20. Hierarchical mtn. massing directs views E to Truchas peak

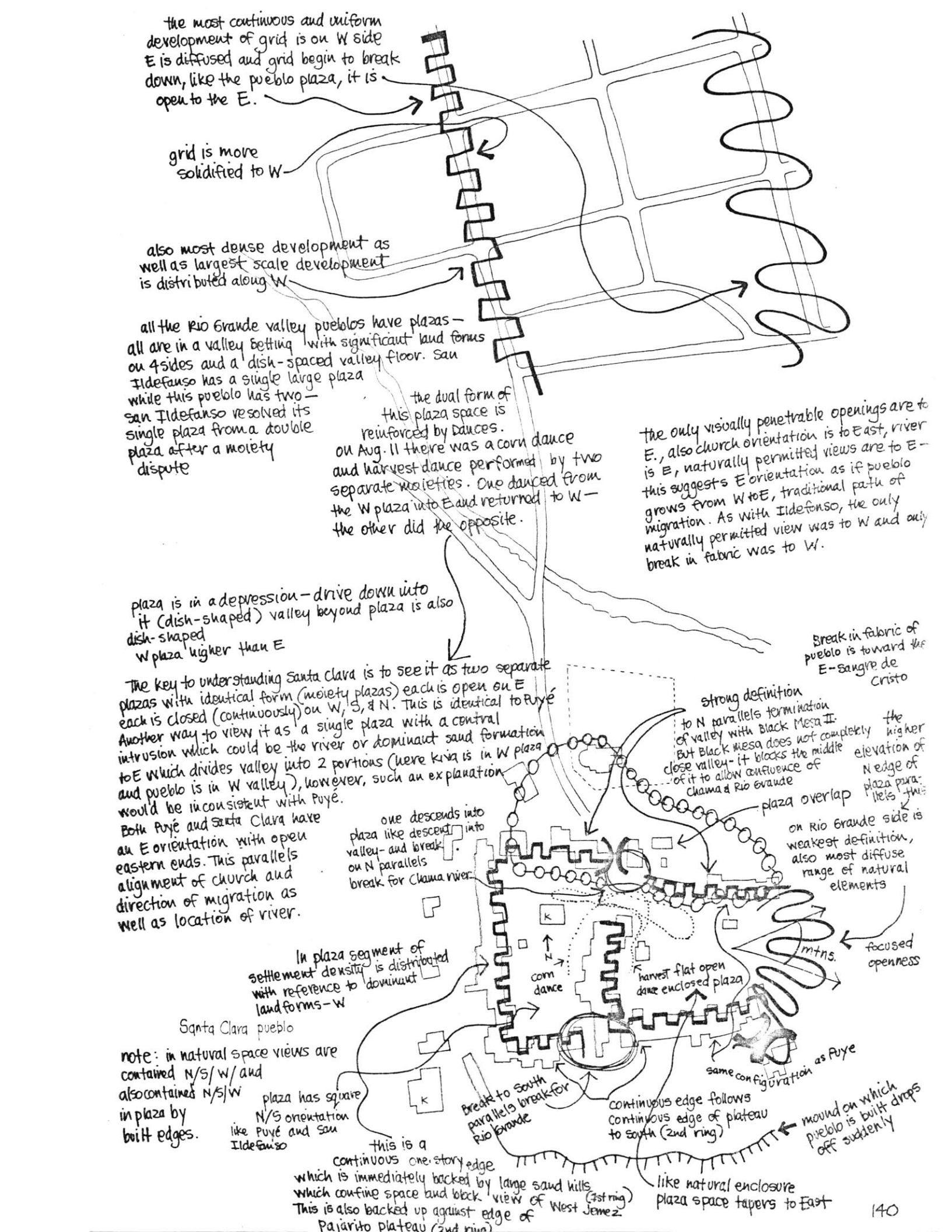
•landscape.

Santa Clara pueblo

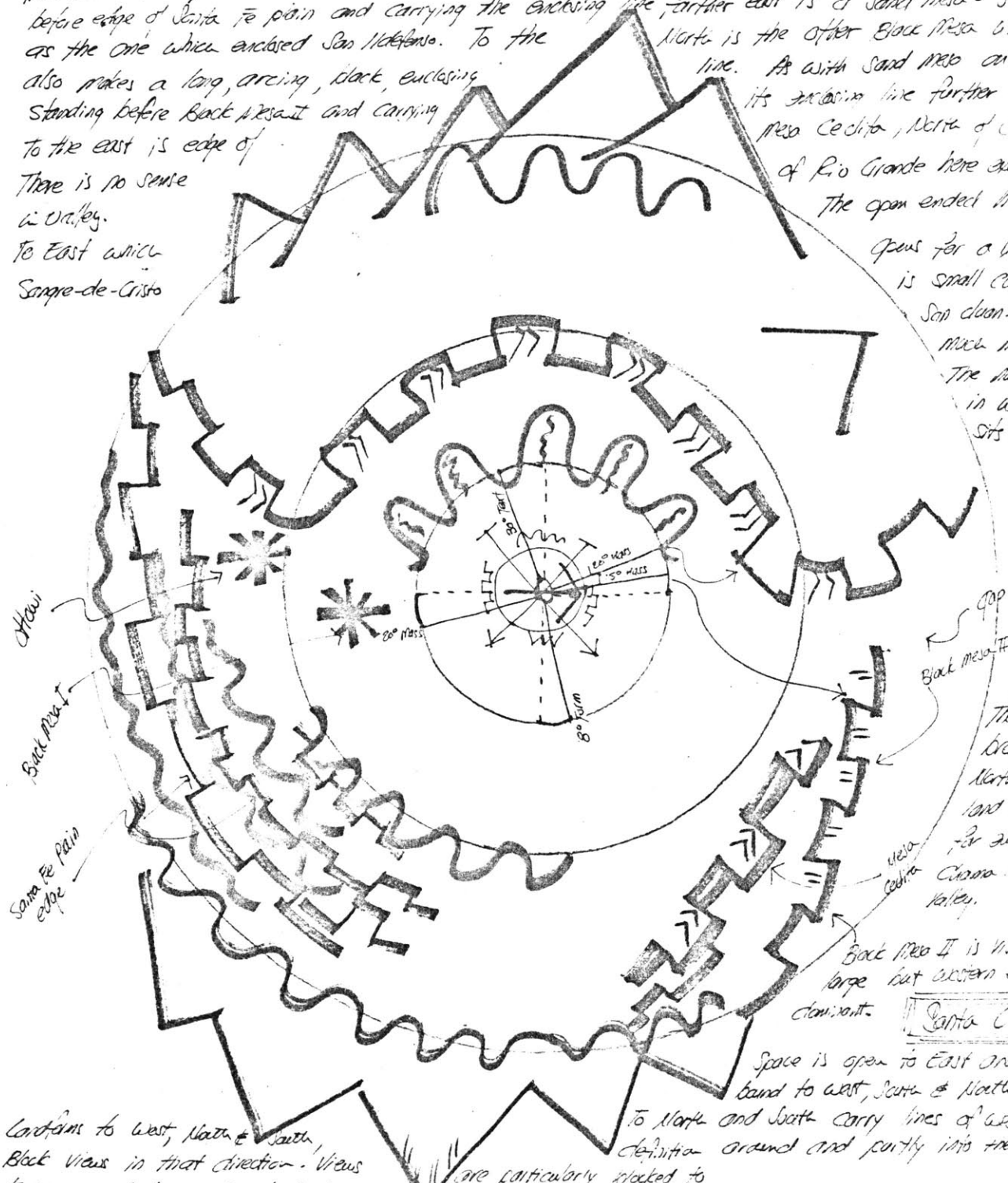
•builtscape•

1. central enclosed plaza space
2. uniform continuous defin. of plaza N/W/S
*3. plaza open to E
4. gap in edge to N
*5. enframed gap in edge to S
*6. plaza space tapers to E
*7. church aligns EW
8. church sky altar orients E
9. cardinal orientation of plaza space
10. kiva to W
11. extension of growth N/S
12. distribution of density to W
*13. breakdown of new development grid E
*14. views contained to N/S/W
*15. vista view to E
16. plaza space flat & open
17. distribution of new development mass to W
18. descend into plaza from N
19. solidification of grid to W
20. U-shaped enclosure N/W/S




the most continuous and uniform development of grid is on W side E is diffused and grid begin to break down, like the pueblo plaza, it is open to the E.
grid is more solidified to W
also most dense development as well as largest scale development is distributed along W
all the Rio Grande valley pueblos have plazas — all are in a valley setting with significant land forms on 4 sides and a dish-spaced valley floor. San Ildefonso has a single large plaza while this pueblo has two — San Ildefonso resolved its single plaza from a double plaza after a moiety dispute
the dual form of this plaza space is reinforced by dances. On Aug. 11 there was a corn dance and harvest dance performed by two separate moieties. One danced from the W plaza into E and returned to W — the other did the opposite.
the only visually penetrable openings are to E., also church orientation is to E ast, river is E, naturally permitted views are to E — this suggests E orientation as if pueblo grows from W to E, traditional path of migration. As with Ildefonso, the only naturally permitted view was to W and only break in fabric was to W.
plaza is in a depression — drive down into it (dish-shaped) valley beyond plaza is also dish-shaped
W plaza higher than E
The key to understanding Santa Clara is to see it as two separate plazas with identical form (moiety plazas) each is open on E each is closed (continuously) on W, S, & N. This is identical to Puyé Another way to view it as a single plaza with a central intrusion which could be the river or dominant land formation to E which divides valley into 2 portions (here kiva is in W plaza and pueblo is in W valley), however, such an explanation would be inconsistent with Puyé.
Both Puyé and Santa Clara have an E orientation with open eastern ends. This parallels alignment of church and direction of migration as well as location of river.
Break in fabric of pueblo is toward the E — Sangre de Cristo
strong definition to N parallels termination of valley with Black Mesa II. But Black Mesa does not completely close valley — it blocks the middle of it to allow confluence of Chama & Rio Grande
the higher elevation of N edge of plaza parallels this
plaza overlap
one descends into plaza like descent into valley — and break on N parallels break for Chama river
on Rio Grande side is weakest definition, also most diffuse range of natural elements
K
N
corn dance
harvest flat open dance enclosed plaza
mtns.
focused openness
In plaza segment of settlement density is distributed with reference to dominant landforms — W
Santa Clara pueblo
same configuration as Puye
note: in natural space views are contained N/S/W/ and also contained N/S/W in plaza by built edges.
plaza has square N/S orientation like Puyé and San Ildefonso
K
Breaks to south parallels break for Rio Grande
continuous edge follows continuous edge of plateau to south (2nd ring)
mound on which pueblo is built drops off suddenly
this is a continuous one-story edge which is immediately backed by large sand hills which confine space and block view of West Jemez (1st ring)
This is also backed up against edge of Pajarito plateau (2nd ring)
like natural enclosure plaza space tapers to East

This is a fully enclosed as the third ring but horseshoe shaped between 2nd & third. The horse shoe shaped space is focused not on open arc like San Cristobal. (less built openness to East than San Cristobal)
To the South, east of Black Mesa I is a long black line which extends from due South around to Southeast. this line is the edge of the Santa Fe plain - it is more visually prominent here than at San Cristobal. Standing before edge of Santa Fe plain and carrying the enclosing line, farther east is a sand mesa - South as the one which enclosed San Ildefonso. To the North is the other Black Mesa which also makes a long, arcing, black, enclosing line. As with sand mesa on South, Standing before Black Mesa II and carrying its enclosing line further around To the east is edge of mesa Cedita, North of Caimayo, There is no sense of Rio Grande here except trees in valley. The open ended horseshoe To East which opens for a view of Sangre-de-Cristo is small compared to San Cristobal - the view is much more bound. The natural space in which settlement sits is also shape



There is a break to Northwest in land definition for entrance of Chama River into valley.

Black Mesa II is visually very large but western edge is dominant.

Space is open to East and partly bound to West, South & North. Landforms to North and South carry lines of western definition around and partly into the East.

Landforms to West, North & South, Black Views in that direction. Views to West and less contained to South - South View is mainly characterized by the simple horizontal line of Santa Fe plain and North by the line of Black Mesa. The West View is completely cut off by horseshoe of landmills. The blocking & containing of Views to North, South & West dramatize View to East of Sangre-de-Cristo Mtns., just as enclosure dramatical West for San Ildefonso. View to East is an expansive View of whole Sangre with range. Further the dominance of East by immediate sand hills, further heightens sense of spatial release to East. Care particularly blocked to

SAN JUAN

A confluence of cultures is evident here -- particularly expressed in the Gothicized church, two story buildings of Western architectural style, and a very European statue in the public right-of-way. This results from San Juan's long history of cultural contact, having been the first capital of Spanish New Mexico in 1598. However, Pueblo life and ceremonial tradition have survived some 300 years of religious, political, and economic assualt, which attests to the cultural strength of San Juan as a test example. San Juan is the largest of Tewa Pueblos (another branch of the Tanoan language group) with a population of 1,663. [1] The Pueblo has always been important among Rio Grande settlements. For example, Pope (organizer of the 1680 Pueblo Revolt) was from this settlement. San Juan retains its importance today and is a center for both inter-pueblo government and Indian arts/crafts.

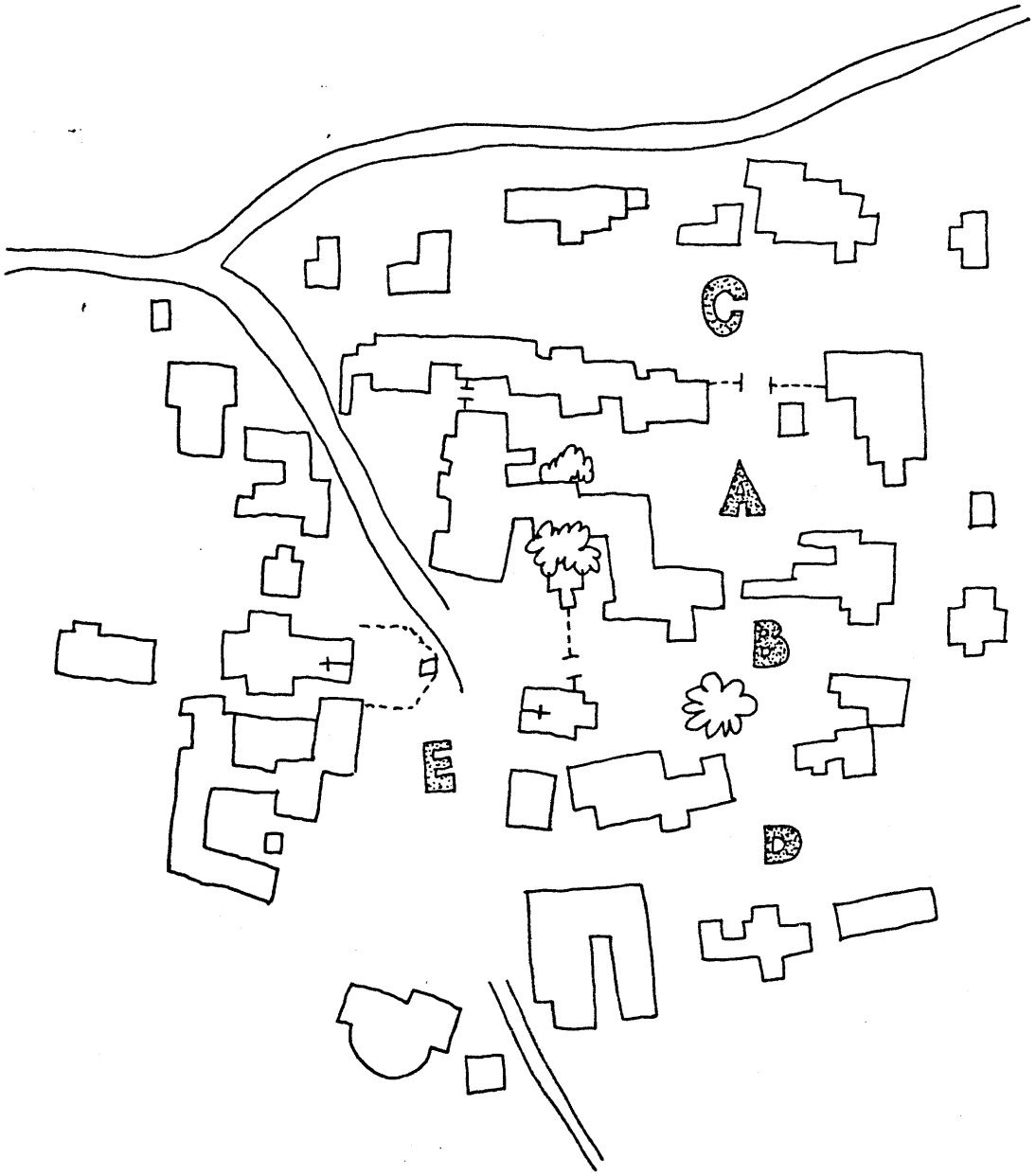
Identification of San Juan's plaza area as spaces A and B (see figure 23) is based not only on ethnographic/anthropological reports [2] but also on observations of ceremonial dances, placement of gates and location of ceremonial structures/objects

---

1. Pueblo of San Juan, information brochure, published by Eight Northern Pueblo Council
2. Dutton, Bertha, Let's Explore Indian Villages Past and Present, Santa Fe, Museum of New Mexico Press, 1962; and Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming in a Pueblo Society, Chicago, The University of Chicago Press, 1969.

figure 23

plazas at San Juan pueblo



(Kiva, Kisa, Sippapu). Observing a Corn Dance on June 24, 1977, we noticed that ceremonial activity was confined to areas A and B. After a segment of dancing was completed in B, the dancers walked in procession to area A and resumed. Further, areas A and B are delineated by gates to the North/West/South separating the plaza from development in those directions. Within this delineated space are located the Kiva, Sippapu, and Kisa (outdoor shelter for Saint's shrine).

Rather than survey A and B as a single, complex space, we comprehended it as two symmetrical but separate plaza spaces. This view is not only reinforced by social duality, as presented in the reference framework,but also duplication of physical attributes. Each plaza has a symmetrical anterior space (C and D -- see map) and each has an identical pattern of landscape parallels (described in field survey notes). This mirror imaging seemingly implies conscious repetition of a built phenomena. This is further substantiated by historical evidence which identifies B as the original plaza, with A developing as a result of growth. [1]

Edges are built elements of particular significance in San Juan's relationship to its landscape setting. Particularly

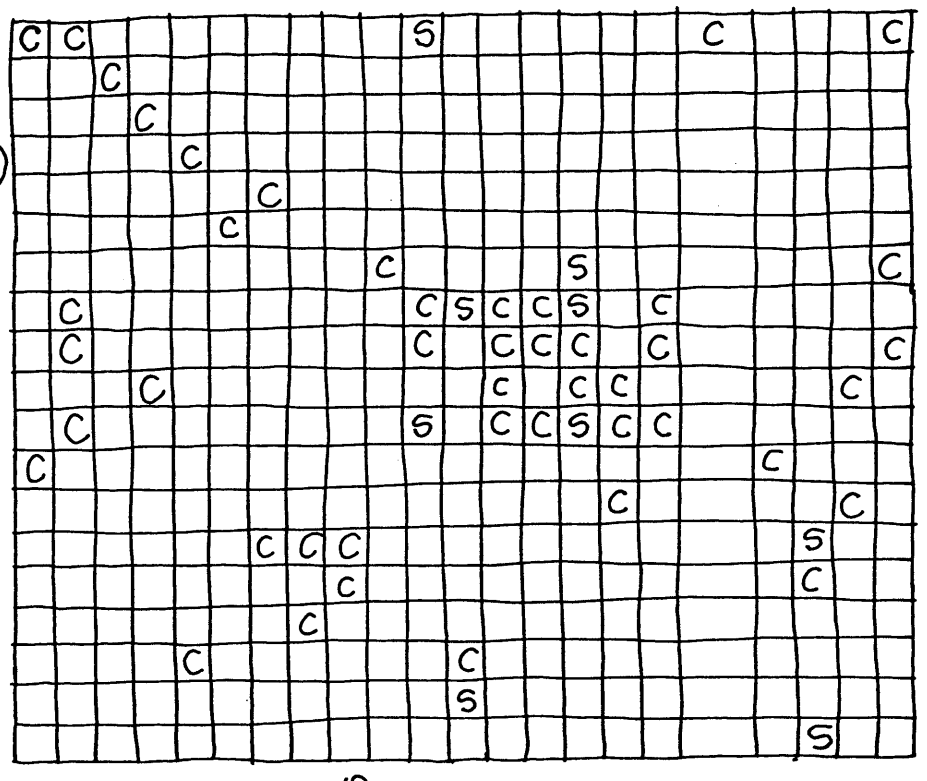
---

1. Ortiz, Alfonso, The Tewa World: Space Time and Becoming in a Pueblo Society, Chicago, The University of Chicago Press, 1969, p. 20 -- Ortiz ultimately identifies four settlement spaces, but we do not feel that patterns of physical articulation (gates) or placement of ceremonial structures reinforces this. What Ortiz defines as the West Plaza is what we earlier describe as a European addition. Also, the area identified by Ortiz as the East Plaza, has no physical definition as a separate space. The North and South Plazas (noted by Ortiz) coincides with our "A" and "B" spaces. Stanley Stubbs (Bird's Eye View of the Pueblos) fails to even recognize the Europeanized West Plaza in his plan of San Juan.

important is treatment of the east edge in comparison to other edges -- that is openness (east) to enclosure (north/west/south). The same sense of spatial articulation is observable in natural definition. Black Mesa (north), edge of the Pajarito Plateau (west), and the Santa Fe plain (south) form a "U" shape of natural enclosure about San Juan. To the east, this "U" opens to an expansive vista of the Sangre-de-Cristo mountains. As seen at Tesuque, these mountains sweep the land up in an easterly direction taking visual attention with it. However, unlike Tesuque, mountains here are distant and visually contrast to the adjacent plateau's impression of confinement -- the net effect is one of spatial release. San Juan's landscape/builtscape matrix identifies dominant landforms west (landscape variable 10) and spatial release east (landscape variables 8, 9, 11) as landscape features most frequently connected (conceptually and structurally) to built features. As a response to this spatial release, San Juan's plazas are open to the east -- a response also seen at Santa Clara and San Ildefonso. In recognition of dominant landforms to the west, mass and height are distributed with preference to that direction. Again, this is a recognition of landscape also observed at Santa Clara, San Ildefonso, Taos, and Picuris. Early photographs of San Juan (1920) illustrate this same pattern. Within the matrix, builtscape variables related to plaza openness east (2, 11, 13) and those related to massing toward the west (14) are identified as having denser networks of landscape relationships.

1. space enclosed by u-shaped landforms on N/W/S
2. monolithic mesa face to N (continuous edge)
3. monolithic plateau face to W (continuous edge)
4. ascending sandhills of Santa fe plain to S (contiguous edge)
5. gap to N for Rio Grande
6. gap in natural edge to W for Chama river
7. views contained to N/W/S by defining landforms
*8. expansive vista of Sangre de Cristo to E
*9. spatial release to E
*10. dominant landforms to W
*11. view of Truchas peak to E
12. flat open valley space of Rio Grande river
13. constrained view of Tsicoma peak to W
14. Rio Grande forms N/S valley axis
15. N/S formation of visible landmasses
16. gap in natural edge to S for Rio Grande
17. S edge most distant & weakest
18. arable land aligns river to W
19. N/S pattern of irrigation

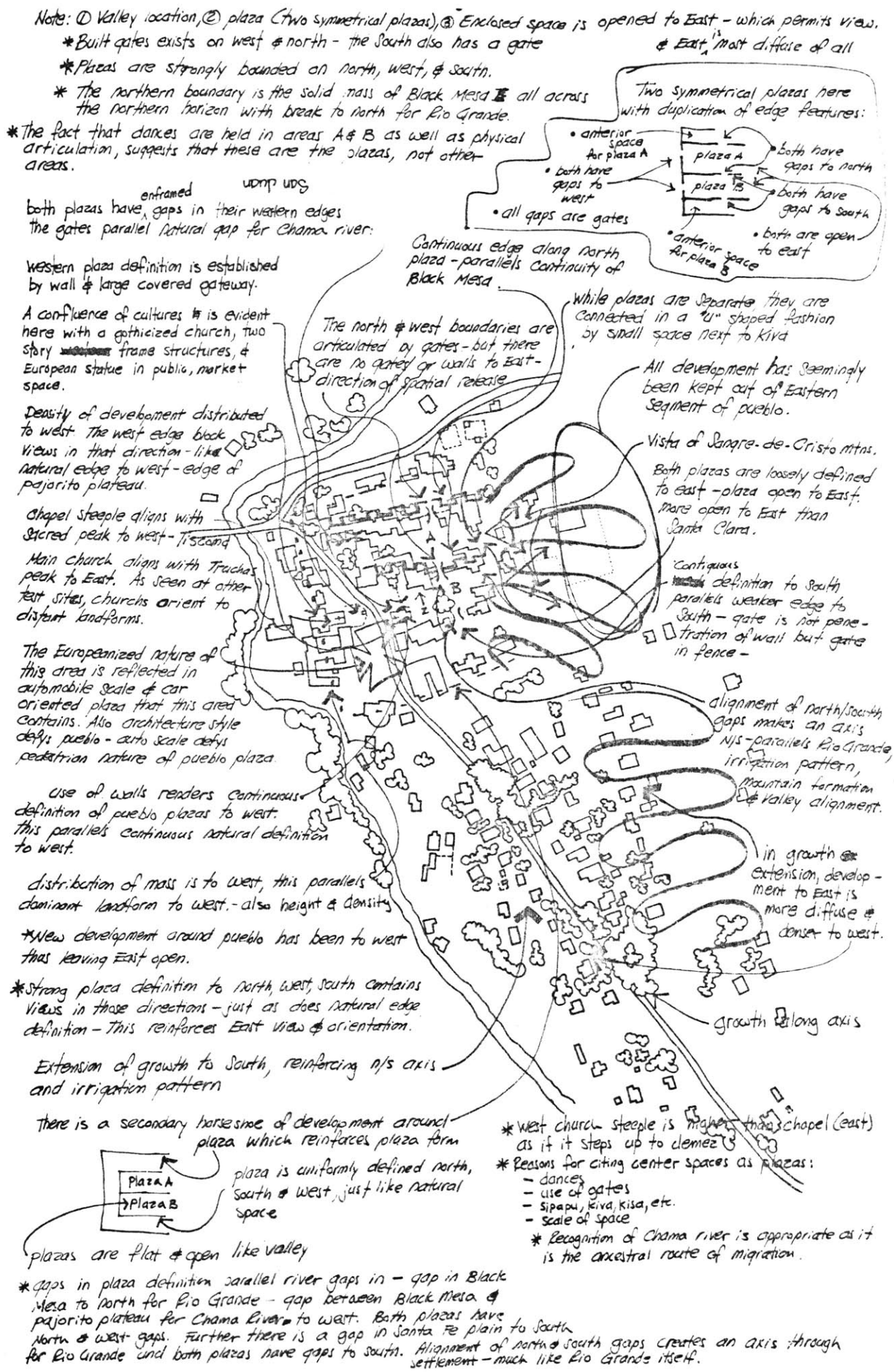
• landscape •



San Juan pueblo

• buildscape •

1. symmetrical central plaza
*2. plaza open to E
3. continuous definition of plaza to N
4. continuous definition of plaza to W
5. contiguous definition of plaza to S
6. enframed gap in W edge
7. enframed gap in N edge
8. enframed gap in S edge
9. align. of enframed gaps makes N/S axis
10. views contained by bldgs. to N/S/W
*11. expansive vista to E
12. extension of growth to S
*13. diffuse/limited development to E
*14. distribution of kiva to E
15. distribution of mass & height to W
16. E/W alignment of churches
17. E orientation of church sky altar
18. symmetrical horseshoe of secondary construction around plaza
19. flat, open plaza
20. N/S alignment of settlement
21. chapel sky altar aligns W
22. uniform plaza definition N/W/S

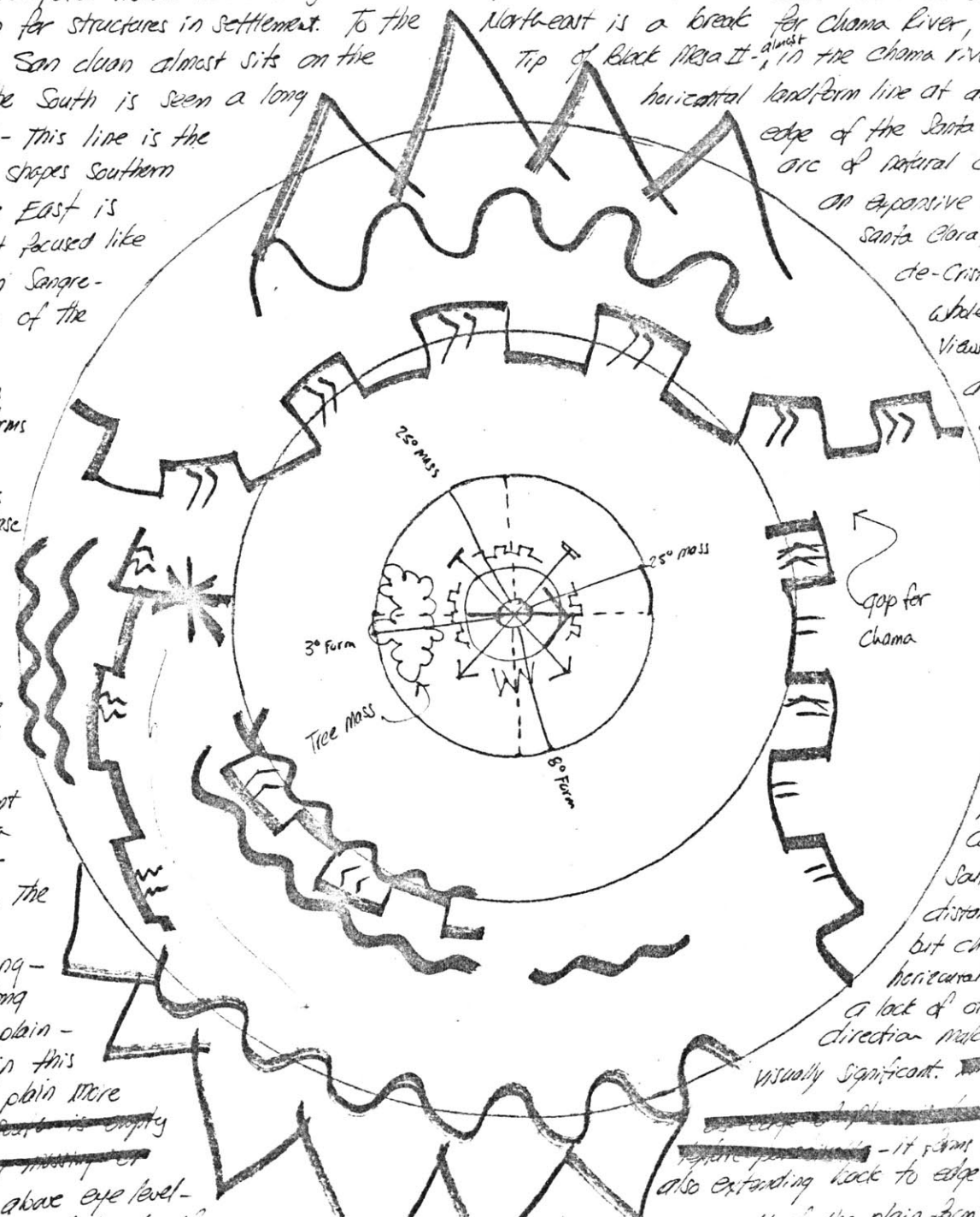

Note: ① Valley location, ② plaza (two symmetrical plazas), ③ Enclosed space is opened to East – which permits view.
* Built gates exists on west & north – the South also has a gate
* Plazas are strongly bounded on north, west, & south.
* The northern boundary is the solid mass of Black Mesa all across the northern horizon with break to north for Rio Grande.
* The fact that dances are held in areas A & B as well as physical articulation, suggests that these are the plazas, not other areas.
& East is most diffuse of all
Two symmetrical plazas here with duplication of edge features:
• anterior space for plaza A
• both have gaps to west
• all gaps are gates
plaza A
plaza B
• both have gaps to north
• both have gaps to south
• both are open to east
• anterior space for plaza B
both plazas have enframed gaps in their western edges the gates parallel natural gap for Chama river:
Continuous edge along north plaza – parallels continuity of Black Mesa.
While plazas are separate they are connected in a "U" shaped fashion by small space next to kiva
Western plaza definition is established by wall & large covered gateway.
A confluence of cultures is evident here with a gothicized church, two story frame structures, & European statue in public, market space.
The north & west boundaries are articulated by gates – but there are no gates or walls to East – direction of spatial release
All development has seemingly been kept out of Eastern segment of pueblo.
Vista of Sangre-de-Cristo mtns.
Density of development distributed to west. The west edge blocks views in that direction – like natural edge to west – edge of pajorito plateau.
Both plazas are loosely defined to east – plaza open to East. more open to East than Santa Clara.
Chapel steeple aligns with sacred peak to west – Tsicomo
Main church aligns with Truchas peak to East. As seen at other Tewa sites, churches orient to distant landforms.
Contiguous definition to South parallels weaker edge to South – gate is not penetration of wall but gate in fence –
The Europeanized nature of this area is reflected in automobile scale & car oriented plaza that this area contains. Also architecture style defys pueblo – auto scale defys pedestrian nature of pueblo plaza.
alignment of north/south gaps makes an axis N/S – parallels Rio Grande irrigation pattern, mountain formation & valley alignment.
Use of walls renders continuous definition of pueblo plazas to west: this parallels continuous natural definition to west.
in growth & extension, development to East is more diffuse & denser to west.
distribution of mass is to west, this parallels dominant landform to west. – also height & density
*New development around pueblo has been to west thus leaving East open.
growth along axis
*Strong plaza definition to north, west, south contains views in those directions – just as does natural edge definition – This reinforces East view & orientation.
Extension of growth to South, reinforcing n/s axis and irrigation pattern
there is a secondary horseshoe of development around plaza which reinforces plaza form
Plaza A
Plaza B
plaza is uniformly defined north, South & west, just like natural space
* West church steeple is higher than chapel (east) as if it steps up to clemeez
* Reasons for citing center spaces as plazas:
– dances
– use of gates
– Sipapu, kiva, kisa, etc.
– scale of space
* Recognition of Chama river is appropriate as it is the ancestral route of migration.
plazas are flat & open like valley
* gaps in plaza definition parallel river gaps in – gap in Black Mesa to north for Rio Grande – gap between Black Mesa & pajorito plateau for Chama River to west. Both plazas have north & west gaps. Further there is a gap in Santa Fe plain to South for Rio Grande and both plazas have gaps to south. Alignment of north & south gaps creates an axis through settlement – much like Rio Grande itself.

Space: This is an enclosed space within the 3rd ring - Within the second ring the natural space is crescent shaped as opposed to Santa Clara which is a focused horse shoe shape. Within the second ring are both the edge of pajarito plateau & Black Mesa II - Their visual presence dominates the setting - especially the plateau edge which provides a monolithic back drop for chama, etc. - visible behind bldgs. Black Mesa's II presence to the North also is visible as a back drop for structures in settlement. To the North-east is a break for Chama River, perceivable as San Juan almost sits on the Tip of Black Mesa II - almost in the Chama river Breaks.

To the South is seen a long horizontal landform line at about 3°5° - This line is the edge of the Santa Fe plain which shapes Southern arc of natural crescent.

To the East is an expansive view (vista open, not focused like Santa Clara) which takes in Sangre-de-Cristo mtns. The Sangre whole range is visible - views in other directions by landforms are blocked or empty. this view transcends spatial release creates a which is sense of by the to east pressure dramatizes bounding enclosing Black of other is visible landforms. but small Mesa II if from to South. a dominant Size prevents Black Mesa becoming by other landmark - is obscured to South. The Competing South view is somewhat distant - beyond the 2nd ring - but characterized by the long horizontal line of Santa Fe plain - A lack of other prominent to view in this direction makes the edge of plain more visually significant. ~~[illegible]~~ to ~~[illegible]~~ - it forms a blocke also extending back to edge of plain which become a part of the plain form as they pass the Second ring. planting of tree masses to the south fills Southern view as if a reaction to its weakness - thus dramatizing focus on Sangre-de-Cristo. River confluence in an important part of this setting - although there is no visual connection to rivers - dominant landforms suggest their presence.

Scale: Scale of the space varies but is definable on N/S & E/W due to landforms & tree masses - on N & S scale is about 25° mass - to South & East about 3°-8° Form but Southern edge is made more intimate by tree mass.



San Juan

TESUQUE

Tesuque is one of the smallest of Tewa Pueblos with a population of 288 [1]. The name Tesuque is derived from Spanish pronounciation of (Tewa) "tay tsoon ghay" meaning "cottonwood tree place." Recent excavations for sewer improvement within Tesuque's plaza have turned up archeological evidence of habitation as early as 1200 AD. According to Bertha Dutton, two-story structures about Tesuque's plaza give some idea of the way small, "prehistoric villages" may have appeared. [2] However, the U.S. Department of Housing and Urban Development is having a significant impact upon Tesuque's traditional appearance. A low-cost housing program initiated in 1965 has led to the construction of 25 new homes in accord with Federal housing standards. These houses are of material other than adobe (typically concrete block), are situated far from each other and equipped with kitchens, central heat and so on. In short, these are self-sufficient, independent dwelling units of an Anglo tradition. As if in reaction to this dispersion of the traditional village form, resident interest in Tesuque's old plaza has been renewed,and plaza structures are presently being renovated. Renewed resident interest has also focused on traditional arts and crafts.

---

1. Dutton, Bertha P., Indians of New Mexico, Tourists Division Department of Development.
2. Dutton, Bertha, Let's Explore Indian Villages Past and Present, Santa Fe, Museum of New Mexico Press, 1962, p. 25.

Tesuque Pueblo sits in a valley of the Rio Tesuque and is immediately flanked west and southwest by long, horizontal sandhills which block any view in those directions. To the northwest, Tesuque's valley opens to a much larger Rio Grande basin. However, this openness does not constitute a spatial release as visual orientation is drawn in another direction. The most dramatic spatial feature is to the east and southeast. Here, Tesuque's site is dominated by a broad vista of the very close Sangre-de-Cristo Mountains. The pinnacle and focusing element of this vista is Truchas Peak. These dramatic landforms which sweep the valley floor up in an eastward direction also sweep one's visual attention as it becomes caught in the landmass heirarchy.

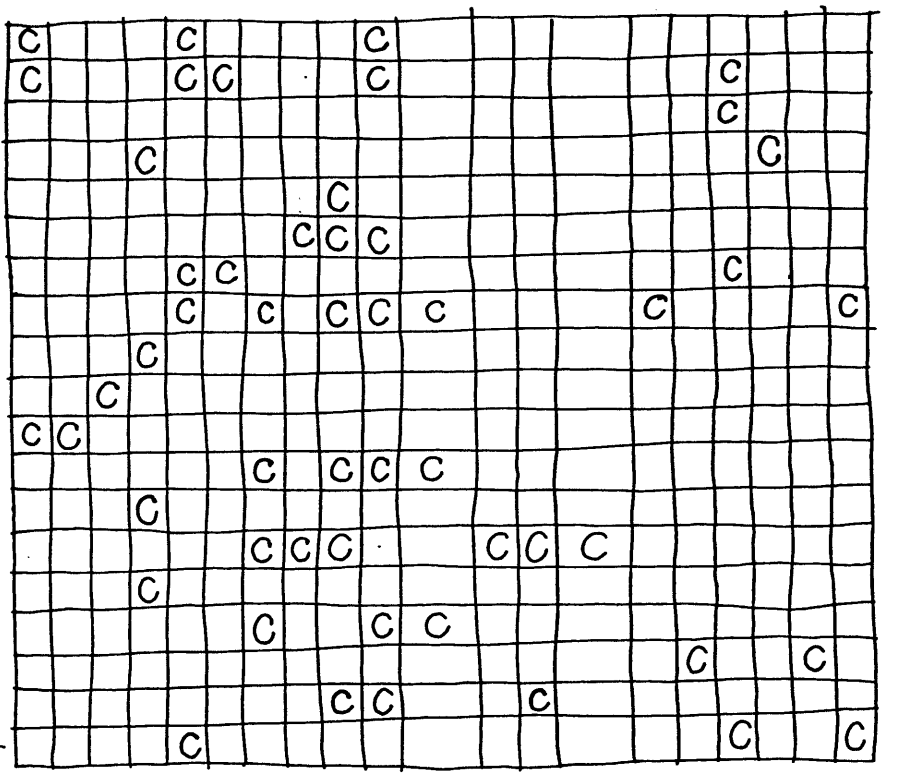
As seen at San Juan, Santa Clara and San Ildefonso; Tesuque responds to to the condition of valley openness, northwest, by opening the plaza in that direction. However, for San Juan and Santa Clara, the direction of openness is also the direction of visible mountains. Visual orientation, defined by heirarchial land-massing, is drawn toward the spatial expanse. For Tesuque, the situation is more complex as visible mountains are part of its spatial containment -- opposite to the direction of openness. Although definition of Tesuque's plaza parallels the natural pattern of spatial containment and expanse, articulation of that

definition turns around and pays special tribute to adjacent mountains by duplicating their form in multi-storied structures along the plaza's east and southeast edge (such multi-storied structures are only seen at Tesuque and Taos). Thus, as seen at Taos, the buildings transcend simple definition of space and become objects themselves within the space. Restoration attention to these structures suggests their importance.

These observations are reinforced by Tesuque's landscape/builtscape matrix. Two sets of landscape features are identified as most influential on builtform (most frequently connected conceptually and structurally to builtscape features) -- those related to natural enclosure (landscape variable 2) and those related to the Sangre-de-Cristo mountains (landscape variables 8, 12, 14). Likewise, two sets of builtscape features are identified as having the most dense network of landscape relationships -- those related to plaza enclosure and alignment (builtscape variables 1, 4, 5) and those related to the plaza's east/southeast edge (builtscape variables 9, 10).

1. enclosed valley space
* 2. continuous definition to NE/SE/SW
3. defining landforms - low, horizontal E/W
4. SE/NW land massing
5. views S/W contained by defining landforms
6. vista of mountains to E & SE
7. valley opens to N/W
* 8. lineal chain of mountain peaks E & SE
9. valley aligns NW/SE
10. elongated valley shape
11. large flat valley - open
* 12. dominant landforms to E & SE
13. NW/SE alignment of Tesuque river
* 14. Truchas peak easterly.
15. NW/SE pattern of irrigation
16. heirarchical landmassing to SE - height increase
17. valley widens to W
18. views directed E & SE
19. long, unbroken, lineal sandhill immediately adjacent on W

•landscape•



Tesuque pueblo

* 1. enclosed central plaza
2. large, open flat plaza space
3. elongated plaza space
* 4. NW/SE alignment of plaza
** 5. continuous definition of plaza - NE/SE/SW
6. plaza open to NW
7. distribution of height & mass to E & SE
8. enframed gap in edge to E
* 9. views directed E & SE
* 10. SE edge - 2 stories
11. deep setback of upper stories of SE house block
12. church sky altar a single mound
13. church sky altar on E plaza edge
14. church aligns E/W-ly inde pendent of plaza
15. SE houseblock profile jagged
16. elimination of development to NW
17. low horizontal edge to E & W
18. growth extends to SE
19. plaza widens to W
20. SE/W edge hard, lineal


Note: mountains to East & Southeast step back in a sequence succeeding phenomena (mesas, foothills, earth, etc) - this sequence is followed by second story set back & church wall.
Note: Structural hierarchy directs views to East & Southeast. As seen at San Ildefonso, there is a conscious effort to direct attention to mountains.
Note: alignment of plaza is same as alignment of Valley - Northwest/Southeast
Note: Continuous plaza definition parallels natural definition.
The enframed gap to the Northeast focuses a view of Sangre-de-Cristo mtns. Thus one becomes visually involved in a landmass hierarchy which builds up toward the Southeast. This is reinforced and dramatized by build up of structural mass hierarchy which also culminates to the Southeast.
Plaza widens to Northwest, like shape of valley space
Association of openness to the Northwest with openness of the valley to the northwest - is reinforced by limited development in this direction
Views here are blocked as in natural setting
This continuous frontage bldg visually bridges exit and maintains continuous frontage across opening - thus maintaining parallel with sandhill
low horizontal edge follow sand hills
The structural silhouette of this houseblock is jagged and follows the profile of mtns behind
These are one story structures with a continuous edge (unbroken frontage except for single exit) which parallels Continuous horizontal mass of sand hills to Southwest
The scale of the plaza is large like scale of valley at foot of mountains
Also plaza space is elongated like valley is shaped
Two story structure has a deep setback like sloping mtns.
Area of restoration
Two story structure
As seen @ Taos this two story house block creates a hierarchial structural mass which replicates the form of Sangre-de-Cristo mountains - visible as they rise from behind. Limitation of two story structures to this main area reinforces this association
enclosed central plaza space
flat/open space open like valley
The church sky alter is a single rounded form & aligns with Truchas peak. By locating church on east edge of plaza - it is viewed from the plaza with mtns. immediately behind
This opening to the Northwest permits views of mountains in this direction which reinforces direction of visual attention
plaza is open to Northwest like valley is open to Northwest - Some response seen at San Juan, Santa Clara & San Ildefonso. This is not a total spatial release but a controlled opening - thus maintaining some sense of enclosure in that direction - it is the largest plaza gap.
growth extends in this direction
Note:
* The hierarchial massing of structures with reference to East & Southeast creates a visual attraction to those directions. Thus views are drawn to the mountains and alignments of structural profiles parallel to mountains creates a visual association of built features with particular landscape reference points
As seen at many other test sites, the church alignment is independent of other plaza elements an aligns directly with more distant mountain phenomenon.
Tesuque
A small two story structure here, breaks the low horizontal edge of this side of plaza, just like the mesa sandcliffs they parallel
Church and two story house block are dominant mass elements. There is a mass heirarchy toward this end of the plaza which directs visual attention
Mountains
heirarchial build up in plaza mass

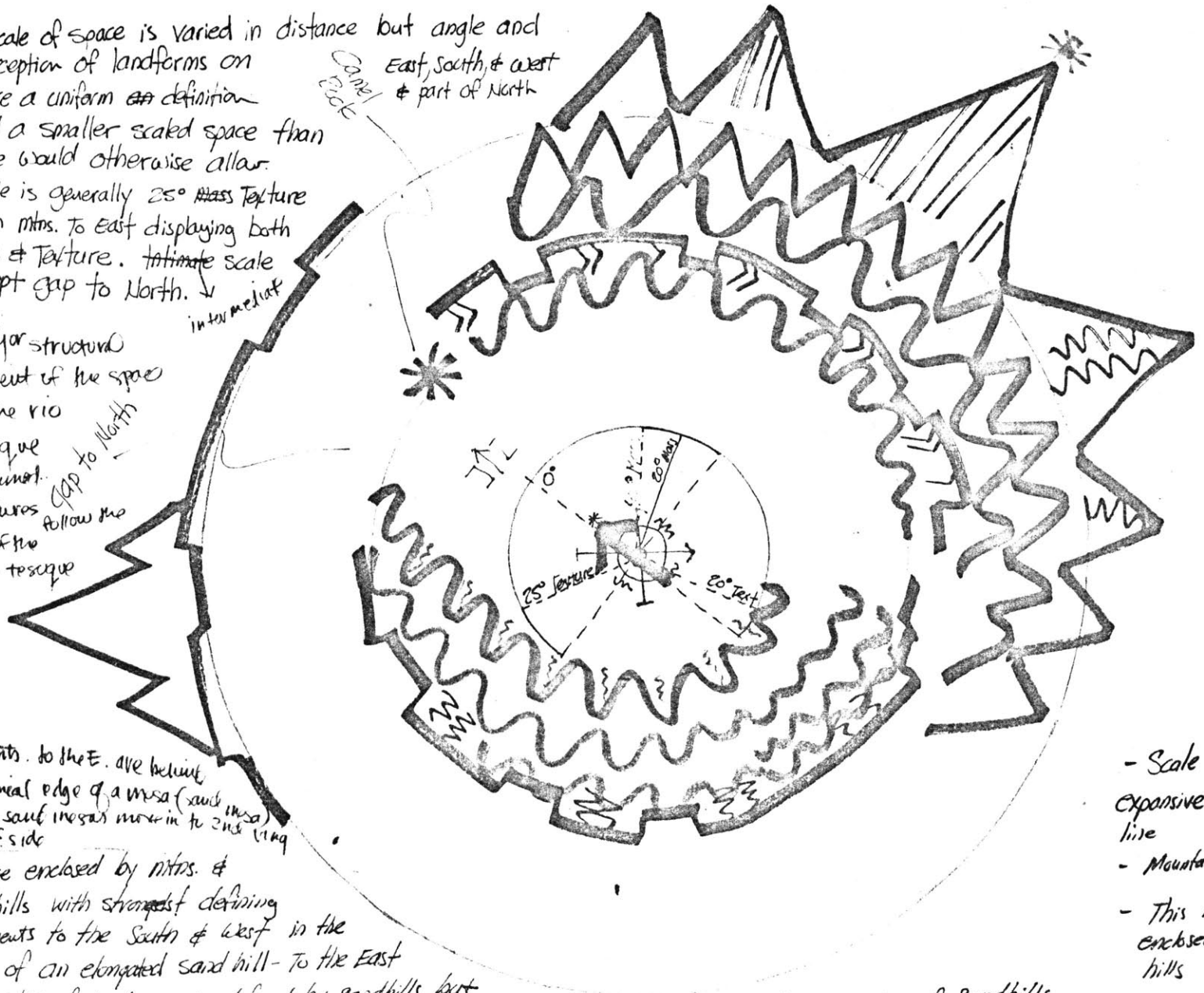
Scale of space is varied in distance but angle and perception of landforms on make a uniform ~~an~~ definition and a smaller scaled space than size would otherwise allow. Scale is generally 25° ~~Mass~~ Texture with mtns. to east displaying both Mass & Texture. ~~Intimate~~ scale except gap to North. ↓ intermediat

Camel Rock

East, South, & west & part of North

a major structural element of the space is the rio tesuque the inward enclosures follow the line of the rio tesuque

gap to North



the mtns. to the E. are behind the linear edge of a mesa (sand mesa) & the sand mesas move in to 2nd ring on E. side

Space enclosed by mtns. & foothills with strongest defining elements to the South & West in the form of an elongated sand hill - To the East the edge of enclosure is defined by sandhills but dominated by mtn. peaks which seem very close to the south are a continuous edge of Sandhills which build up to Santa Fe plain. Major gap occurs to to North but vista in that direction is dominated by ~~Black~~ Mtns Camel rock

tree cover reduced heavy around pueblo, Hacienda

- Scale of space is expansive to the North - a horizon line
- Mountains dominate setting
- This is an enclosed space enclosed by mtns & sand hills

Tesuque

SANTO DOMINGO

Although Santo Domingo was settled in approximately 1700, most of the buildings date after 1886 as a severe flood in that year washed most earlier construction away. Sitting in a broad valley of the Rio Grande, just south of Whiterock canyon, the Pueblo is composed of two physical parts -- divided by an irrigation ditch. West of the irrigation ditch is a dense clustering of long parallel houseblocks, and concealed within them is an elongated plaza. East of the irrigation ditch is a much larger, flat plaza and Santo Domingo's church. On August 4, 1977 (annual feast day of Pueblo patron saint St. Dominic), we witnessed a Corn Dance which was confined entirely to the West plaza (dance plaza). Even though Santo Domingo's church is in the East plaza, ceremonial events are confined to this western space, thus suggesting that East/West components of the settlement are not equal in their ritual importance. This separation of the Pueblo into two separate components is reinforced by our field analysis (following pages) which identifies relationships of each components to different landscape phenomena. Separation of the settlement components is further reinforced by the independent alignment (orientation) of each -- structurally linked together by the irrigation ditch and church.

The landscape/builtscape matrix for Santo Domingo identifies the valley (landscape variables 9, 12), Rio Grande River (landscape variables 17, 23) and canyons of the Pajarito Plateau (landscape variables 3, 8, 10, 11, 24) as landscape features having significant influence on settlement form (most frequently connected to built features). Further, landscape variables 13, 14, 21 (also influential on builtform) reveal the visual relationship between canyons and valley -- a relationship also expressed by builtscape variable 22 (depression of houseblocks -- it has a dense network of landscape relationships). Builtscape acknowledgement of canyons to the west parallels archaeological evidence which traces former settlement of Santo Domingo ancestors to sites of the Pajarito Plateau , e.g., Frijoles Canyon. [1] In this way, settlement form expresses a collective memory of ancestral homes. Santo Domingo's builtscape/landscape matrix also indicates that the parallel houseblock (builtscape variables 2, 7, 26, 29), irrigation ditch (builtscape variables 17, 18) and eastern plaza (market plaza) (builtscape variables 8, 9, 10, 14, 19, 21, 25) are separate components of the settlement which generate individual and dense networks of relationships to landscape features -- these relationships are overwhelmingly conceptual. Finally, builtscape variable 14

---

1. Scully, Vincent, Pueblo -Mountain, Village, Dance, New York Viking Press, 1972, p. 175.

(independent orientation of plazas) affirms the independence of plaza, ditch and houseblocks. Variable 14 is densely connected to landscape features.

Santa Domingo is largest of the Rio Grande Pueblos (2,515 people) and characteristically most conservative as expressed in the strength of ritual life. The Corn Dance we witnessed was truly an awesome sight. A gradual swelling of some 1000 dancers into the long, narrow dance plaza -- a growing crescendo of singing -- an intensifying vibration of the ground -- is not unlike the climactic scenerio of a storm developing over distant mountain peaks.

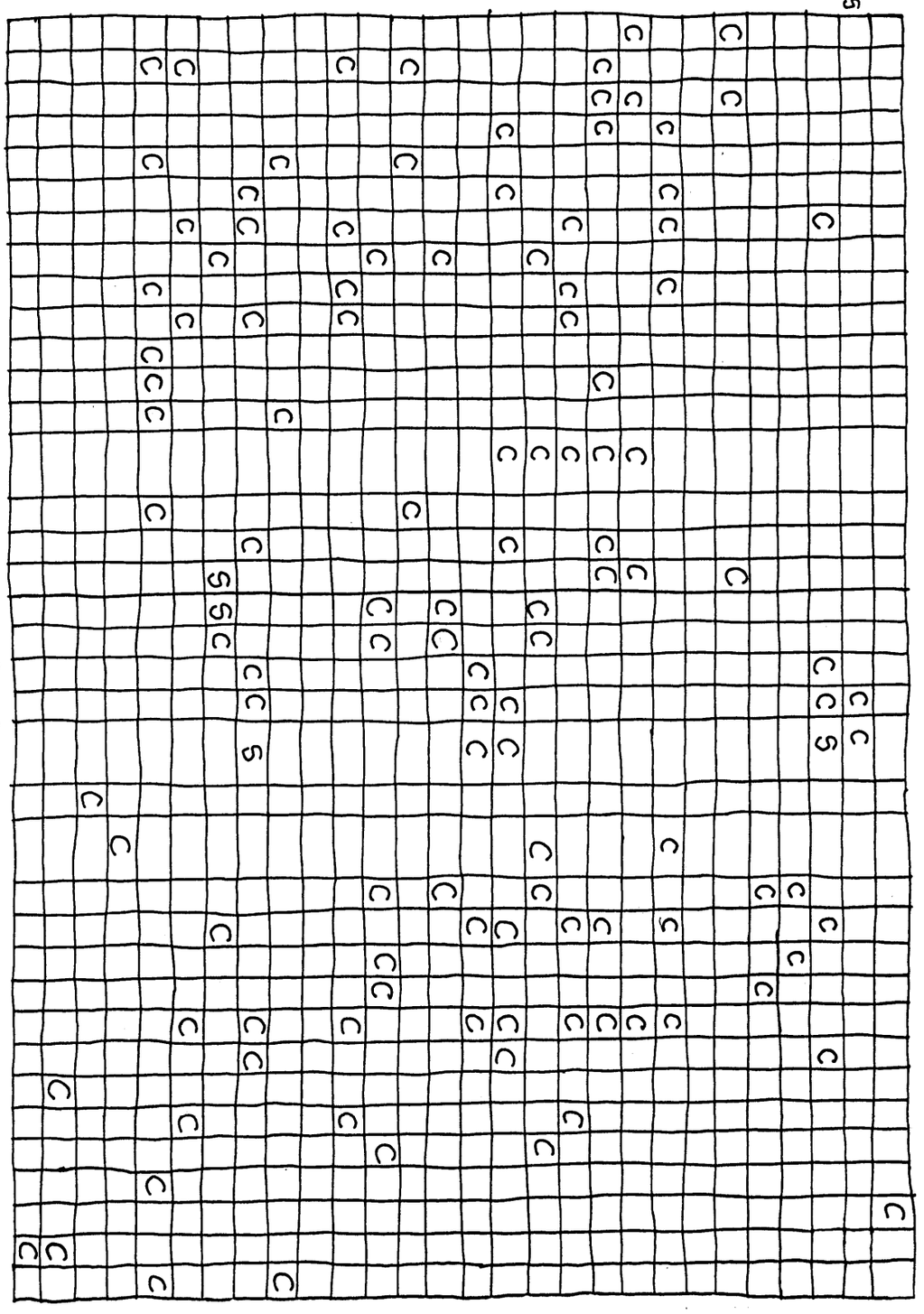
1. expansive, enclosed valley space
2. views to N/E/S contained by defining landforms
*3. vista of Jemez & Jemez foothills to W & SW
4. gap in natural definition to N
5. break in natural definition to S
6. Rio Grande runs along W edge of valley space
7. large sandhill to E penetrates first ring
*8. canyons of Santa Ana mesa & Pajarito plateau to W
*9. valley E of Rio Grande river
*10. canyons W of Rio Grande river
*11. canyons align E/W
*12. valley space aligns N/S
*13. visually dominant landforms to W
*14. spatial release to W
15. valley tapers to N/S
16. parallel pattern of canyons
*17. Rio Grande runs N/S
*18. canyons perpendicular to Rio Grande river
19. elongated valley space
20. plateau mass conceals canyons
*21. hierarchical landmassing directs views W
22. N/S pattern of irrigation
*23. E/W pattern of drainage
*24. deep, narrow sheer-faced canyon form
25. continuous edge - merging sandhills to E
26. descend in valley from NW/N/NE
27. horizontal form of plateau & mesa edge
28. flat, open, valley space

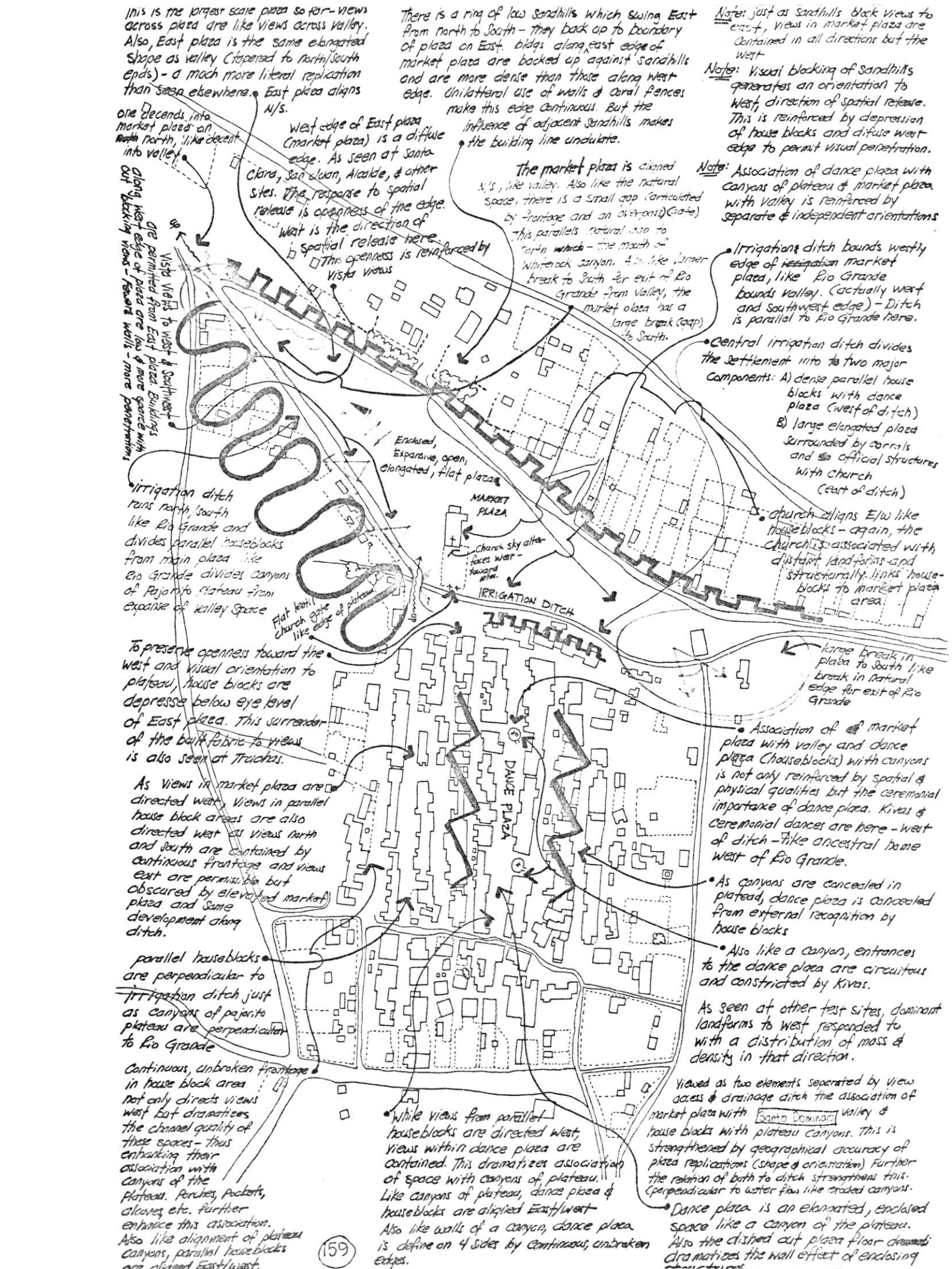
• landscape •

Santo Domingo pueblo

• built scape •

1. expansive, elongated market plaza, east of irrigation ditch
*2. dense, parallel houseblocks, W of irrigation ditch
3. irrigation ditch divides pueblo areas
4. dance plaza West of ditch
5. dance plaza concealed in houseblocks
6. distribution of density and mass to west
*7. E/W alignment of parallel houseblocks
*8. N/S alignment of plaza (market plaza)
*9. elongated dance plaza
*10. E/W alignment of dance plaza
11. uniform continuous definition of dance plaza
12. dance plaza dish-shaped space
13. narrow entrances to dance plaza
*14. orientation of dance plaza independent of market plaza
15. views from dance plaza are contained
16. kivas West of ditch
*17. ditch forms W edge of market plaza
*18. ditch runs N/S
*19. market plaza aligns N/S
20. diffuse definition of market plaza to W
*21. vista views to W/SW from market plaza
*22. houseblocks depressed below eye-level of market plaza
23. descend into market plaza on N
24. E edge market plaza continuous but irregular alignment
*25. market plaza tapers N & S
*26. views in houseblock area directed W
27. gap in market plaza to N
28. break in market plaza to S
*29. church aligns E/W parallel to houseblocks
30. sky altar faces W
31. flat lentil church gate
32. houseblocks perpendicular to ditch
33. cardinal orientation of market plaza
34. visually closed corners to dance plaza
35. enclosed market plaza
36. flat, open, plaza space
37. narrowing of plaza about Kiva




This is the largest scale plaza so far - views across plaza are like views across valley. Also, East plaza is the same elongated shape as valley (tapered to north/south ends) - a much more literal replication than seen elsewhere.
East plaza aligns N/S.
There is a ring of low sandhills which swing East from north to South - they back up to boundary of plaza on East. bldgs along east edge of market plaza are backed up against sandhills and are more dense than those along west edge. Unilateral use of walls & corral fences make this edge continuous. But the influence of adjacent sandhills makes the building line undulate.
Note: just as sandhills block views to east, views in market plaza are contained in all directions but the west.
Note: Visual blocking of sandhills generates an orientation to west, direction of spatial release. This is reinforced by depression of house blocks and diffuse west edge to permit visual penetration.
Note: Association of dance plaza with canyons of plateau & market plaza with valley is reinforced by separate & independent orientations
one descends into market plaza on north, like descent into valley
West edge of East plaza (market plaza) is a diffuse edge. As seen at Santa Clara, San Juan, Alcalde, & other sites. The response to spatial release is openness of the edge. West is the direction of spatial release here. This openness is reinforced by Vista views
The market plaza is aligned N/S, like valley. Also like the natural space, there is a small gap (articulated by frontage and an overpass) (Gate) this parallels natural axis to north, which - the mouth of Whiterock canyon. Also like, former break to South for exit of Rio Grande from Valley, the market plaza has a large break (gap) to South.
Irrigation ditch bounds westly edge of ~~irrigation~~ market plaza, like Rio Grande bounds valley. (actually west and southwest edge) - Ditch is parallel to Rio Grande here.
Central irrigation ditch divides the settlement into two major components: A) dense parallel house blocks with dance plaza (west of ditch)
B) large elongated plaza surrounded by corrals and official structures with church (east of ditch)
along west edge of plaza are low & more sparse with out blocking views - Foward walls - more penetration.
Vista views to west & Southwest
Enclosed, Expansive, open, elongated, flat plaza
MARKET PLAZA
Church sky alter faces west - toward sun.
church aligns E/W like house blocks - again, the church is associated with distant landforms and structurally links house-blocks to market plaza area.
irrigation ditch runs north/south like Rio Grande and divides parallel houseblocks from main plaza like Rio Grande divides canyons of Pajarito plateau from expanse of valley space
Flat textil church gate like edge of plateau
IRRIGATION DITCH
To preserve openness toward the west and visual orientation to plateau, house blocks are depressed below eye level of East plaza. This surrender of the built fabric to views is also seen at Truchas.
large break in plaza to South like break in natural edge for exit of Rio Grande
Association of ~~of~~ market plaza with valley and dance plaza (houseblocks) with canyons is not only reinforced by spatial & physical qualities but the ceremonial importance of dance plaza. Kivas & ceremonial dances are here - west of ditch - like ancestral home west of Rio Grande.
DANCE PLAZA
As views in market plaza are directed west, views in parallel house block areas are also directed west as views north and south are contained by continuous frontage and views east are permissible but obscured by elevated market plaza and some development along ditch.
As canyons are concealed in plateau, dance plaza is concealed from external recognition by house blocks
parallel houseblocks are perpendicular to irrigation ditch just as canyons of pajarito plateau are perpendicular to Rio Grande
Also like a canyon, entrances to the dance plaza are circuitous and constricted by Kivas.
As seen at other test sites, dominant landforms to west responded to with a distribution of mass & density in that direction.
Continuous, unbroken frontage in house block area not only directs views west but dramatizes the channel quality of these spaces - thus enhancing their association with canyons of the plateau. Porches, pockets, alcoves, etc. further enhance this association. Also like alignment of plateau canyons, parallel houseblocks are aligned East/west.
While views from parallel houseblocks are directed west, views within dance plaza are contained. This dramatizes association of space with canyons of plateau. Like canyons of plateau, dance plaza & houseblocks are aligned East/west
Also like walls of a canyon, dance plaza is define on 4 sides by continuous, unbroken edges.
Viewed as two elements separated by view access & drainage ditch the association of market plaza with Santo Domingo valley & house blocks with plateau canyons. This is strengthened by geographical accuracy of plaza replications (shape & orientation) further the relation of both to ditch strengthens this. (perpendicular to water flow like eroded canyons.
Dance plaza is an elongated, enclosed space like a canyon of the plateau. Also the dished out plaza floor dramatizes the wall effect of enclosing

Note:-As at San Ildefonso, the greatest vista permitted by built fabric, parallels vista permitted by landforms.

- As at Taos, the dances are ~~con~~centered in, and confined to ~~buildings~~ dance plaza & parallel houseblocks. This suggests that parallel house blocks are more sacred than expansive ~~town~~ market plaza — just as the ~~mesa~~ plateau and canyons towards which views are directed are more sacred than the valley (ancestral home - route of migration). Thus, the town is split into two phenomena - market plaza & houseblocks. As would be expected, Kivas are in parallel houseblocks. Also the church faces and aligns with canyons. As the river divides valley and plateau edge, the irrigation ditch divides parallel houseblocks & market plaza.

- The fact that one Kiva is in the dance plaza & other in with the buildings implies a conscious location of one as a central element. The stairways of the two kivas point Southwest to exit of Rio Grande from valley. Parallel ~~entry~~ axis of market plaza & Kivas suggest a structural connection between the two just as church structurally links market plaza & house blocks. Another structural connection is the drainage ditch

- Buildings along the immediate west bank of the irrigation ditch are less a boundary for the market plaza as they are a bounding element for the dance plaza.

- The Dance plaza does not have a correct cardinal orientation - reinforcing its special association with the plateau canyons. Other pueblo plazas have a strong N/S or E/W alignment - but this one is slightly off - it must have a more specific determinant. Other pueblo plazas sit in the center of a ritual world - but the dance plaza ~~is~~ reaches toward its natural setting. Just as one gets a broad view from ~~a~~ market plaza - one gets a broad view from valley. Just as one gets contained views from dance plaza, one gets contained views from canyons of the plateau.

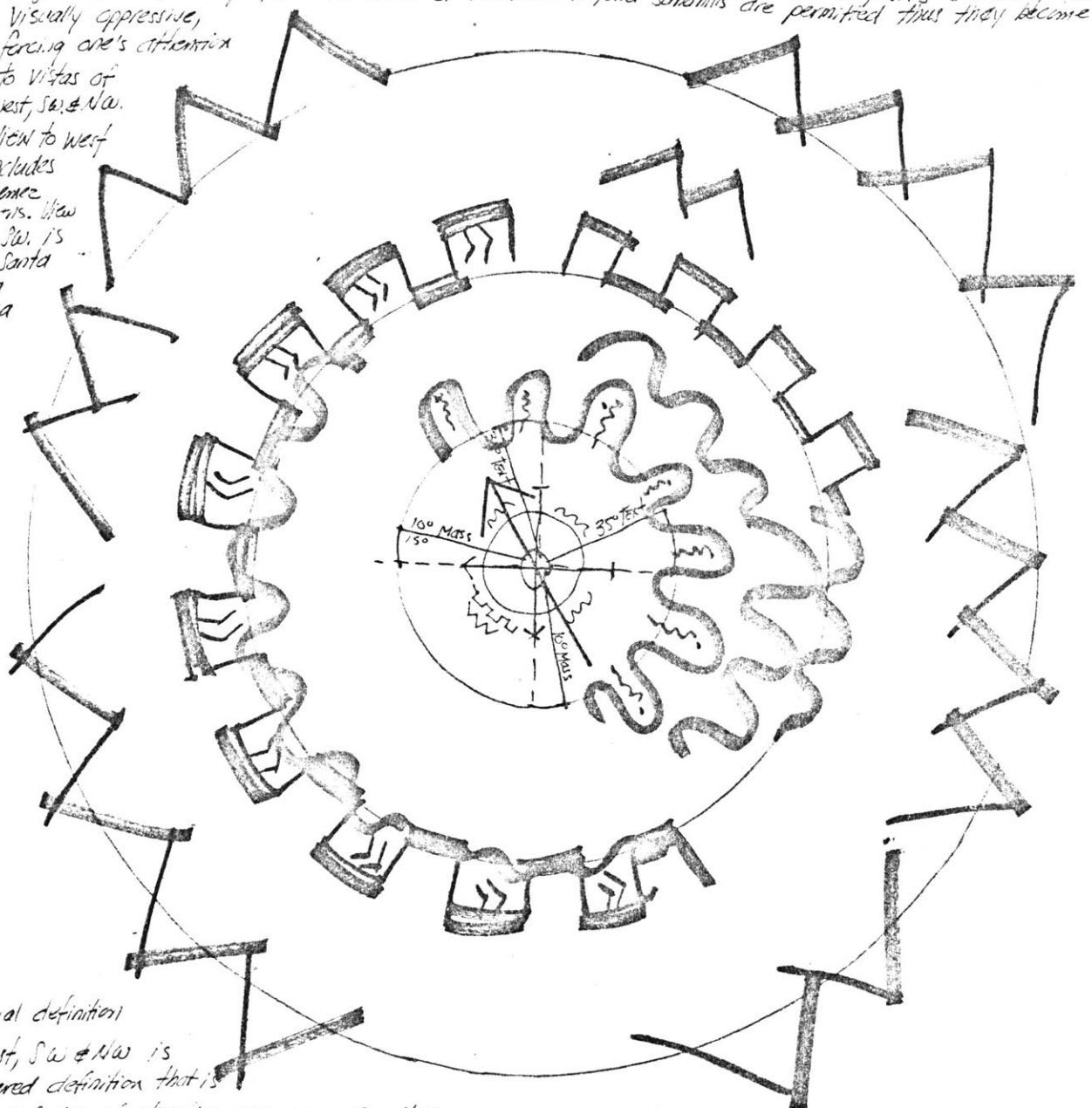
- The west edge of dance plaza extends beyond north/south edges - which visually conceals exits so that the visual impression is one of a continuous box.

- The Kiva sits in the middle of the East side of plaza & one enters plaza by going through small spaces on either side of it - like entering a canyon itself

The other Kiva is also used to create an entrance to plaza as it sits in a major gap to South.

|| Santo Domingo
Extra Field Sheet ||

This is an enclosed space at the 2nd ring by mesa & plateau edges and at the third ring by mtns. Jemez North, Sangre Northeast of the East, Sandia South & Jemez West. There is a gap & ill definition to the South and a small narrow gap to North. On the first ring, swinging East from North to South is a strong edge of the sandhills which back right up to bldgs of Settlement. These sandhills are the edge of a flow of gravel deposits emanating from edge of Sangre Fe parried. No views of landforms beyond sandhills are permitted thus they become visually oppressive, forcing one's attention to vistas of West, SW & NW. View to West includes Jemez mtns. View to SW. is of Santa Ana mesa



Natural definition
To west, SW & NW is a layered definition that is it is a series of elevation phenomena - sandhill, mesa, mtn. and the eye raised through this sequence. The mesa & plateau edge visible in vista is eroded with deep canyon erosions and the sandhills beyond them ripple in a washboard fashion. The Rio Grande runs through the natural space but is not perceivable from point of observation - however, ~~a drainage ditch~~ an irrigation ditch is. In general, the natural space is dish stepped with an opening in the Southeast.

Scale: The scale of this space varies from intimate (35° features) as one looks to sandhills -- to intermediate 10° mass as one faces vista. However, the size of vista landforms raise the eye and lead it off to even more distant phenomena thus making the vista expansive in scale

Santo Domingo

PICURIS

Picuris is one of the two northern Tiwa pueblos, Taos being the other. Its present population of 185 constitutes a small settlement organized about a plaza. The settlement itself is situated in a moutain valley of the Rio Pueblo. Juan Onate visited Picuris in 1598 but earliest physical descriptions of its built form date to 1776. At this time, Fray Francisco Dominguez notes a plaza defined by a terraced structure,in one corner, and rectangular houseblocks, about the sides. He also describes a church (same as present day church) as forming the plaza's eastern edge. [1] The settlement structure recorded by Dominguez is still recognizable in that the church and its adjacent plaza remain. While the terraced structure is gone, a cluster of houses built on a rise overlooking the plaza now defines its northwest corner -- thus paralleling Dominguez's description.

Further notations of Dominguez describe three houseblocks five to six stories high sitting on small hills. Recent archaeological excavations have located these north of the plaza. [2] While these structures are no longer standing, this pattern of mass and density distribution north of the plaza is still recognizable in settlement form. Dramatic changes in population (3000 in 1680, 328 in 1760, and 100 in 1905) [3] certainly played a

---

1. People of the Hidden Valley: Guidebook to Picuris Pueblo, New Mexico, Published by the Picuris Pueblo Council
2. Ibid
3. Schroeder, Albert H., A Brief History of Picuris Pueblo: A Tiwa Indian Group in North Central New Mexico, Adams State College Papers in Anthropology, 1974.

significant role in abandonment of these earlier structures.

Changes in outlying structures and stability of the plaza area, as suggested by comparison of present Picuris with Dominguez's writings, parallel the hypothesis of this study. Our survey analysis of Picuris (illustrated on the following pages) attributes particular significance to the valley space (landscape variables 1, 10), directional reference points in natural setting (landscape variables 9, 13) and uniform definition of natural setting (landscape variables 2, 14). Likewise, the plaza space (builtscape variable 3), organizational alignment (builtscape variable 18,4) and definition of plaza edges (builtscape variables 5,16) are identified as having denser networks of landscape relationships. Simply stated, the symmetrical, uniformly defined plaza with structures of larger mass placed along its northern edge parallels the symmetrical, uniformly defined valley with larger landforms along its northern boundary. As the reference framework suggests, most relationships in Picuris' landscape/builtscape matrix are conceptual. Finally, the name Picuris, is according to some authorities, [1] derived from a Spanish corruption of a Jemez word (Jemez Pueblo) meaning "at mountain gap" -- "pay kwee lay ta."

---

1. Pearce, T.M., New Mexico Place Names -- A Geographical Dictionary, Albuquerque, University of New Mexico Press, 1965, p. 120.

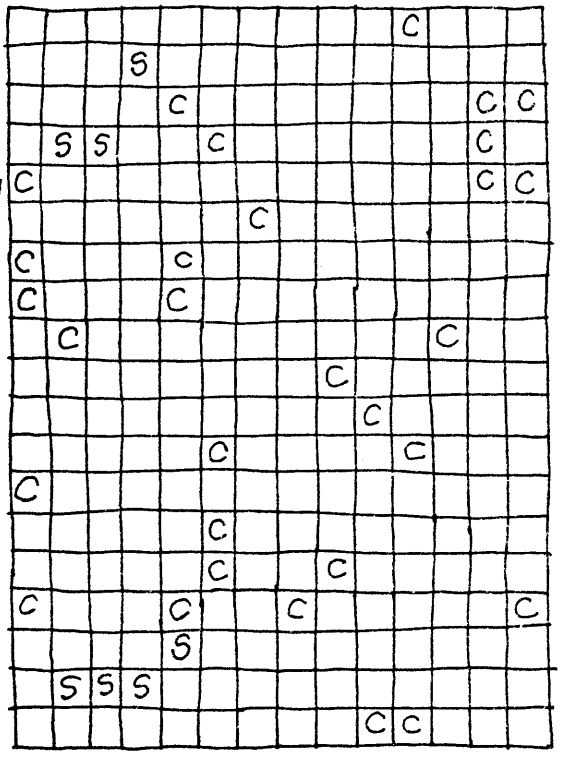
Picuris pueblo

•landscape•

*1. enclosed valley space
*2. uniform definition of space to N/S/E/W
3. gap in edges to E/W for Rio Pueblo
4. dominant landforms to N
5. water gap in northern landform edge
6. water gap in southern landform edge
7. views confined by defining landforms
8. lush, valley bottom
*9. Truchas peak to S
*10. small dish-shaped valley-sloping floor
11. E/W pattern of irrigation
12. E/W alignment of valley space
*13. E/W flow of Rio Pueblo
*14. edges formed by mountain foothills

•builtscape•

1. distribution of mass and density to N
2. audial connection to irrigation ditch
*3. enclosed central plaza space
*4. cardinal orientation of plaza
*5. uniform, contiguous definition of plaza N/E/S/W
6. tree planting in plaza
7. descend into plaza on S
8. descend into plaza on N
9. gap in edge to E & W
10. gap in edge to S
11. gap in edge to NE
12. church aligns N/S
13. church gate mounded lentil
14. sky altar faces S
15. mounded sky altar between horn corners
* 16. views contained by plaza definition
17. dish-shaped plaza space
*18. E/W extension of growth
19. church on N plaza edge



Note: growth is extended East/west along Rio Pueblo & irrigation pattern

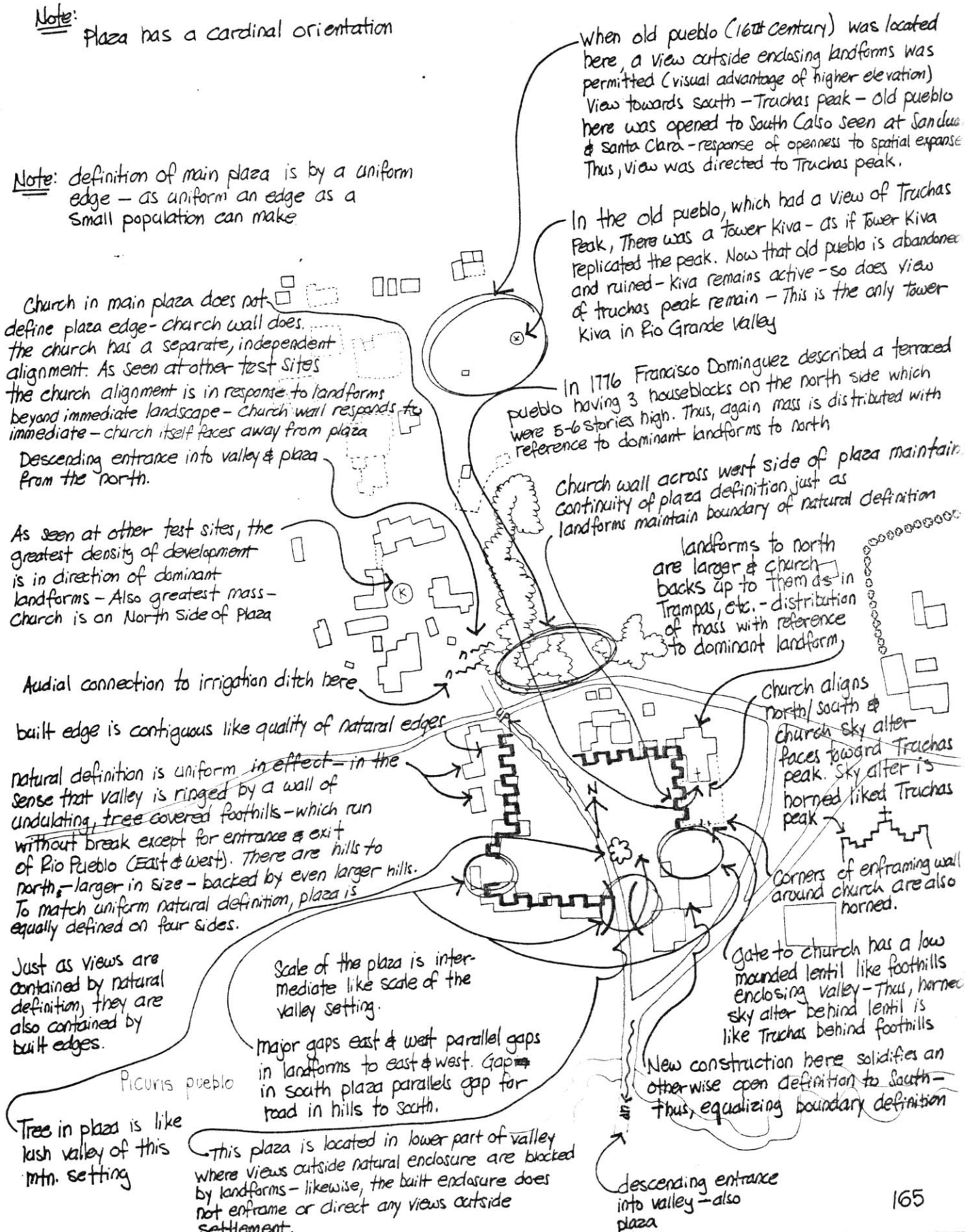
Note: Sloping valley floor (pitched to center) is dramatized by sloping plaza – plaza located on side of sloping hill.

Note: Plaza has a cardinal orientation

Key points:

1. orientation of church
2. open ended old plaza
3. 1776 notes
4. uniform definition of present main plaza.

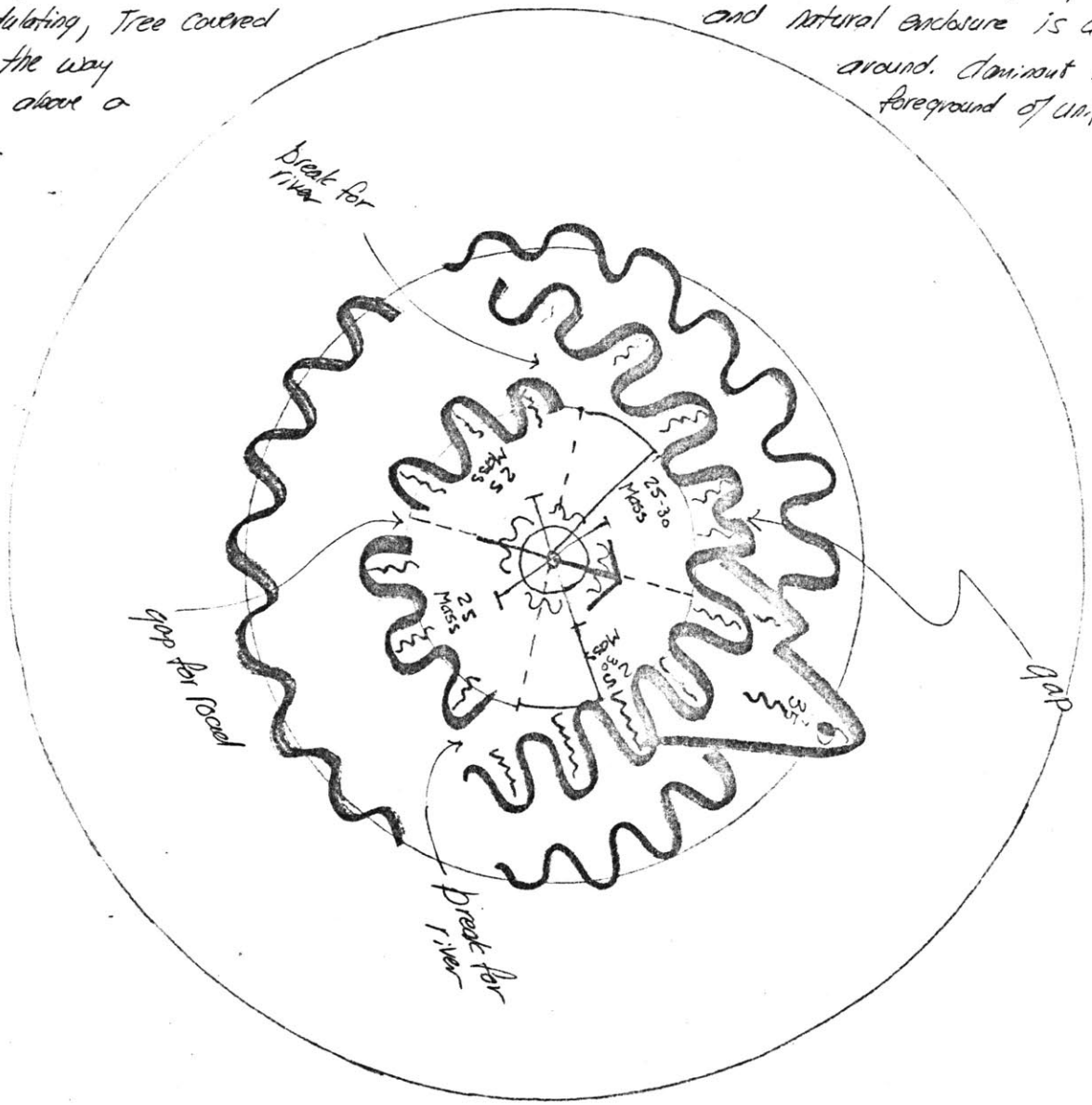
Note: definition of main plaza is by a uniform edge – as uniform an edge as a small population can make



Type of enclosure: This is an enclosed space bounded on 4 sides by undulating, Tree covered foothills. Major gaps occur to East & West for entrance & exit of Rio Pueblo. Views outside the enclosure are blocked by first ring landforms. Floor of valley is further defined by grass covered valley floor in contrast to tree covered hills. Edge is undulating but unbroken except for river, & therefore continuous.

Dominant landforms are to North ~~and~~ and decend as they move East & West from that point. The river is a very visible element in this setting. Hills are ~~uniformly~~ undulating, Tree covered all the way rise above a hills.

and natural enclosure is uniform around. Dominant landforms foreground of uniform



Scale: The scale of this space is intermediate due to soft visual quality of surrounding definition - landforms are smaller foothills, more perceivable in their ~~result~~ totality than Mesas of Velarde. Scale is 25 degree massing.

Peculiars

SAN ILDEFENSO

The Spanish first arrived in San Ildefenso on July 11, 1591 providing the first written accounts of this Pueblo, although Stanley Stubbs estimates that it has been inhabited since at least 1300. The 1591 Spanish expedition found a large population of about 2,000 people,[1] but present day population estimates are much smaller at 431. Like Santa Clara, people of San Ildefenso are enjoying relative prosperity as a result of employment at Los Alamos scientific laboratories.

As noted in reference to Santa Clara, people of San Ildefenso look to settlement ruins of the Pajarito Plateau as their ancestral home. Particular among these ruins is Tsankawi (Tsahn-kah-wee) and a gate in the west edge of San Ildefenso's plaza focuses one's vision across the Rio Grande valley to that particular site near Los Alamos. Also, like Santa Clara and San Juan, San Ildefenso responds to the spatial conditions of its landscape setting by duplicating these in articulation of its plaza. Thus natural definition to the north/east/south and spatial openness to the west is paralleled by built definition of the plaza's north/east/south edge and openness of the west edge. However, unlike Santa Clara or San Juan, this openness is enframed -- more purposefully articulated --

---

1. Pueblo de San Ildefonso, information brochure, published by Eight Northern Pueblos Council.

as if one's attention is being focused on a particular landscape phenomena. This conscious orchestration of view and the monolithic quality of the plaza's northern edge suggest a built effort to overcome a competition for visual dominance that exists in the natural setting between Black Mesa (north) and spatial openness to the Jemez mountains (west). Thus where San Juan and Santa Clara achieve a visual sweep to distant sacred mountains by simply opening one end of their plazas, San Ildefenso must provide some perceptual cues. Such an analysis is reinforced by San Ildefenso's landscape/ builtscape matrix. Visual connection west to distant hierarchial landmassing of the Jemez mountains is particularly influential on Pueblo form (landscape variables 7, 8, 10, 29, 31, 32, 30). Also influential among landscape variables is number 23 -- visual competition between Black Mesa and western mountains. Likewise, builtscape variables 4, 5, 6, 8, 9, 10, which relate to articulating this western view and 12 and 14, which relate to negating visual competition, are identified as having the densest networks of landscape connections.

When Stanley Stubbs undertook his aerial study of Pueblos in 1948 [1], San Ildefenso had a dual plaza form similar to present day San Juan or Santa Clara. The present single large

---

1. Stubbs, Stanley A., Birds'-Eye View of the Pueblos, Norman, University of Oklahoma Press, 1950.

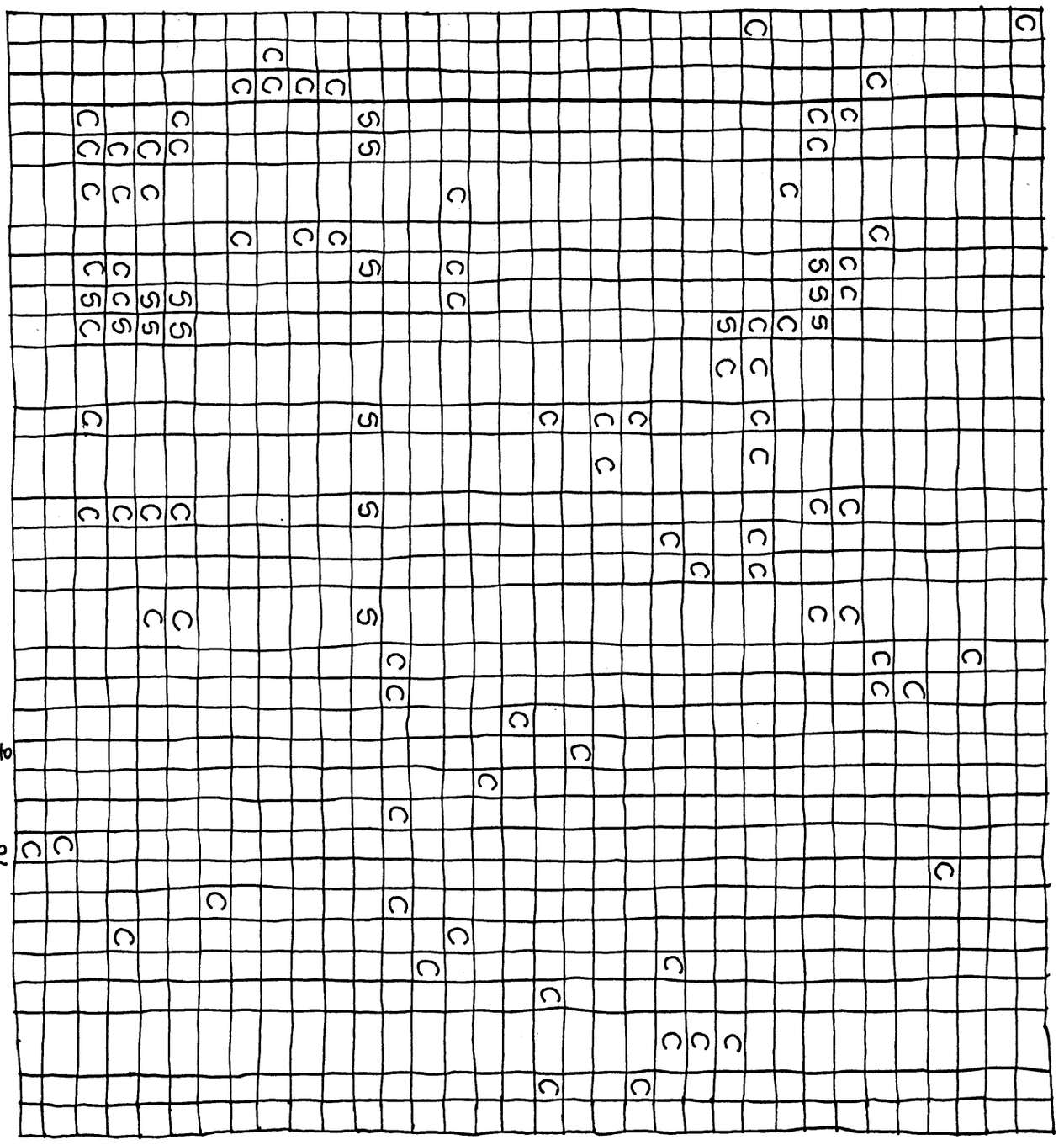
plaza space was divided by a central houseblock into two smaller ones. However, this central block was removed sometime after 1950 as a result of a moiety dispute. [1] This connection of plazas and moieties further reinforces our comprehension of San Juan and Santa Clara as separate but identical plaza spaces instead of a single complex spatial arrangement.

The Tewa name for San Ildefenso (pok wo ghay ongwee) means "pueblo where the water cuts down through." This Indian characterization of the natural setting parallels our field observations concerning the importance of this site as a drainage/river confluence. Built reinforcement of this is seen in the plaza's prominence as a circulation node . In all other Pueblos, some roads enter the plaza but other roads circumvent it -- thus going into the plaza is a circulation option. At San Ildefenso, no such options exists -- all roads converge in the plaza space.

---

1. Scully, Vincent, Pueblo-Mountain, Village, Dance, New York, Viking Press, 1972, p.113 .

1. enclosed valley space
2. large, flat, expansive valley
3. break in natural edge to NW
4. lush green valley
5. break in natural edge to SW
6. N/S flow of Rio Grande
*7. views N/E/S contained by defining landforms
*8. vista of Jemez mtns. to W
9. Jemez vista seen beyond horizontal plateau edge
*10. space defined to N/S/E/W
11. W edge continuous-broken by labyrinth canyon
12. E edge contiguous-merging sand hills
13. S edge diffuse undulating hills of Santa Fe plain
14. N edge continuous sand mesa
15. N sand mesa continues around to E edge
16. Ottowi to SW-adjacent to river gap
17. N mono lithic face of black mesa
18. Black mesa(I) adjacent to NW gap
19. ceremonial sandhills to SE
20. dominant landform west
21. descend into valley space from hills on SE
*22. valley site a major drainage confluence
*23. Black mesa and Jemez compete for visual dominance
24. Ottowi & Black mesa(I) align N/S
25. irrigation pattern N/S
26. elongated valley space N/S
27. N/S landmassing
28. gap to E for Rio Pooqye
*29. view of Tsankawi to SW
*30. view of Tsicoma to W
*31. spatial release to W
*32. hierarchical landmassing directs views W
33. Black Mesa(I) penetrates valley space imposing presence
34. Ottowi penetrates space-intrusive presence



• landscape •

San Ildefonso
pueblo

• built scape •

1. enclosed central plaza space
2. elongated plaza space
3. N/S alignment of plaza
*4. gate in W edge directs views W
*5. enframed openness to W
*6. church centered in enframed opening
7. church aligns N/S
*8. views directed W
*9. vista view to W
*10. low wall bridges opening W
11. W edge-contiguous-broken by labyrinth penetrations
*12. N edge continuous
13. N edge extends unbroken around to E
*14. N edge negates visual connect. W
15. S edge diffuse
16. E edge contiguous
17. views contained by edges except where enframed
18. broken gap in NW plaza corner
19. broken gap in SW plaza corner
20. 2 story kiva in N edge adjacent to gap
21. 2 story kiva in SW corner adjacent to gap
22. 2 story bldg. in SE corner
23. roads converge in plaza
24. round kiva penetrates plaza space
25. large tree in plaza
26. gap in E edge
27. distribution of mass to W
28. descend into plaza on SE
29. sheer face of N edge (monolithic)
30. SW/S/SE complicated by porches and alcoves
31. N edge lineal-hard
32. central kiva penetrates plaza

Note: landscaping & large tree in plaza is like the lushness of valley. - however, landscaping is confined to perimeter except for large tree in center - thus plaza is kept open. Scale of the plaza is expansive like scale of natural space.

Note: major gap in east plaza edge like gap in natural edge for Rio Pojoaque

Note: like visual qualities of Sandhills, hills of Santa Fe Plain and canyons of Pajorito Plateau - South, Southeast, & west edges are made visually more complex by porches & alcoves.

Roads converge in Plaza like confluence of drainage and rivers in valley. There is no choice in circulation but to converge in plaza - Plaza is a movement node.

Round Kiva penetrates plaza space like Ottowi penetrates natural space. It bears the same relationship to the South edge ~~like~~ as Ottowi bears to the Santa Fe Plain. Also narrow space between west edge & Kiva is like gap between Pajorito plateau & Ottowi for Rio Grande.

This two story structure sits @ base of sacred sand hill. - The only two story structure on this edge

Note: plaza has perfect cardinal orientation.

This entrance decends into plaza like decent into valley along Hwy 4.

East edge of plaza is a contiguous edge like series of large sandhills which define natural space along the East edge. The soft building line (undulating bldg. line also follows pattern of sandhills as opposed to rigid bldg. line (hard) of North & Northeast edge. Even bldg line to west is more uniform

Set back edge

gap

Scale like valley

Contiguous edges

Kiva like Ottowi

Continuous edge

gap

diffuse edge

Enframed opening

just as continuous Sand Mesa slips behind 1st ring sand hills - as continuous edge wraps around to East, it is set back from rest of east edge

Fences & landscaping help hold this edge together and establish a line

just as continuous natural edge (Black Mesa & Sand Mesa) wraps around from North to East - Monolithic & continuous built edge also wraps around from North to East

An enclosed central plaza space

Plaza space is open, flat, and elongated like valley setting

Also like alignment of valley setting and directional character of landmassing, plaza space is aligned north/south - elongated in that direction.

Monolithic, continuous edge, follows Black Mesa & Sand Mesa

South plaza is a diffuse definition like Sandhills building up to edge of Santa Fe plain is a diffuse definition

Gap in Southeast edge parallels gap for exit of Rio Grande (adjacent to Ottowi)

Roads converge in plaza

This 2 story structure aligns with Ottowi

Continuous monolithic edge - negative visual competition

The west plaza edge is a contiguous edge with labyrinth penetrations like edge of plateau penetrated by deep canyons

Black Mesa competes for visual dominance with landforms of clearer. This monolithic wall reinforces westward orientation by negating this visual competition (visually screens out Black Mesa)

However, location & presence of Black Mesa is identified by this two story structure, adjacent to Northwest gap - like Black Mesa adjacent to Rio Grande. (Kiva)

Mass and height is distributed along west plaza edge - with reference to dominant land forms

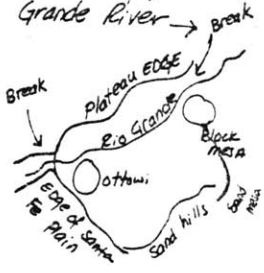
This enframed opening also enframes the church and sets it apart from the rest of development as an object to be viewed

This gate in the west edge of plaza focuses one's view to Tsankawi - pajorito plateau ruin near Whiterock.

This break to northwest plaza is like break to East of Black Mesa (northwest of settlement) for the entrance of Rio Grande River

This openness to the west is enframed by adjacent structures and the long low wall (dashed line) This is the only permissible view from the plaza and creates a strong west orientation - views directed west

The church sky alter as viewed from within the plaza aligns with the sacred mountain Tsichoma. However, church also aligns North/South (axis of its plan) and in so doing orients to both Black Mesa (north) and Ottowi (South). These two landforms are visually powerful and as seen at other Tewa sites there is a response to them (also they are sacred).



Placement of the church here in the visual corridor of westward orientation allows its visual association with Tsichoma while alignment allows visual response to Black Mesa & Ottowi.

San Ildefonso

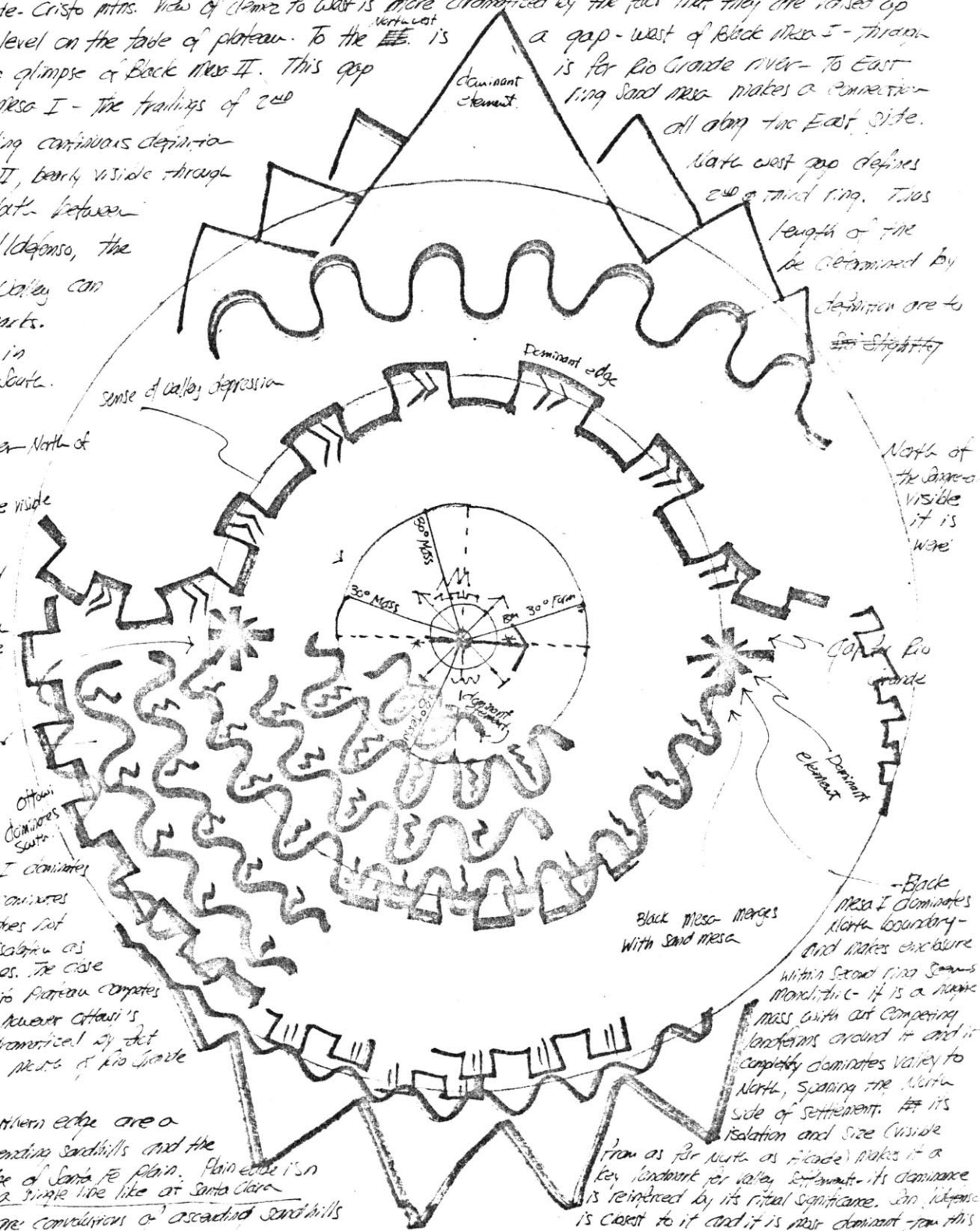
Note: San Ildefonso is in a large valley @ a main drainage confluence (Rio Pojoaque, Rio Grande, etc.) - Scale of plaza is large like scale of valley & all roads converge in plaza. The importance of plaza as a node is significant compared to other pueblos - at others roads ring or pass by plaza and entering is a choice - here there is no such choice

Note: The fact that west orientation is intentional is reinforced by use of devices such as gate which centers on Tsankawi - The only use of a gate in the plaza (and this is not the main entrance in terms of traffic) - Further, the church wall maintains continuity of edge but being low allows visual openness without a break in natural definition.

Note: All the buildings are placed so that even if they aren't in line, you can not get a clear view except where one is orchestrated - ie church wall

Note: all views from within plaza are contained by built edges except where orchestrated.

This is an enclosed space bound on all sides at the second ring but dominated by phenomena to the west where edge of plateau & cleaves are the only permitted vistas (direction & spatial relief) vistas in other directions are contained by landforms, especially high sandhills to the East which block any possible view of Sangre-de-Cristo mtns. Views of cleaves to west is more dramatized by the fact that they are raised up above eye level on the face of plateau. To the Northwest is a gap - west of Black Mesa I - through which is a glimpse of Black Mesa II. This gap is for Rio Grande river - To East of Black Mesa I - the trailings of 2nd ring Sand Mesa makes a connection thus providing continuous definition all along the East side. Black Mesa II, barely visible through Valley on North between West gap defines 2nd & third ring. Thus San Ildefonso, the length of the Rio Grande Valley can be determined by visual landmarks. definition are to Major breaks in Northeast & South. for Rio Grande



Slightly further North of town location Cristo mtns. are visible to East - Thus as it town purposely placed in "lack" of Sandhills - which would dramatize visual connection to cleaves.

North of the cleaves visible it is west

Gap for Rio Grande

Dominant element

ascending Sandhills of Santa Fe plain

Otowi dominates South

As Black Mesa I dominates North, Otowi dominates South but it does not sit in visual isolation as Black Mesa does. The close edge of Pajarito Plateau competes with Otowi - however Otowi's importance is dramatized by fact that it sits in mouth of Rio Grande Gorge.

Black mesa merges With Sand mesa

Black mesa I dominates North boundary - and makes enclosure within second ring seems monolithic - it is a massive mass with no competing landforms around it and it completely dominates valley to North, spanning the North side of settlement. Its isolation and size dramatize from as far North as Pilaode) makes it a key landmark for valley settlement - its dominance is reinforced by its ritual significance. San Ildefonso is closest to it and it is most dominant from this vantage point.

Along the Southern edge are a series of ascending sandhills and the continuous edge of Santa Fe plain. Plain edge is not perceivable as a single line like at Santa Clara

To the East are convolutions of ascending sandhills which penetrate the first ring and completely prevent any visual connection with more distant eastern landforms.

San Ildefonso

* The key feature about Ildefonso's location is that there is a real sense of recession into Rio Grande Valley - driving in from Southeast road makes a gradual descent for almost two miles. San Ildefonso sits near the confluence of Pajarito River & Rio Grande - thus its setting is a drainage collection point for numerous

ALCALDE

Just north of San Juan Pueblo, on the northern edge of San Juan reservation,is the small village of Alcalde. Alcalde is sited east of the Rio Grande-- at the very foot of Black Mesa (II). Black Mesa rises almost 1000 feet above the village as a monolithic,sheer faced mass extending approximately 15 miles north and five miles south. The visual effect is one of directed space -- that is space attenuated north and south by the overpowering presence of this horizontal landmass. Horizontality and directional emphasis are reinforced by the Mesa's flat, level, unbroken form which can be seen extending across the Rio Grande valley's northern end as far away as Santa Fe -- 37 miles. At Alcalde, Black Mesa sits alone in a spatial expanse with no competing landforms to weaken its impact. East of Alcalde is a sense of spatial release similar to that described for San Juan (just six miles south). This eastern expanse of space is terminated by a distant vista view of the Sangre-de-Cristo mountains. Because Black Mesa is so monolithic and visually oppressive, the eastern expanse becomes more dramatic. With the Sangre-de-Cristo as a distant backdrop, a tremendous sense of void results. Within this void, the only clear organizational reference becomes Black Mesa itself with its lineal form reinforced by the Rio Grande's north/south

flow as well as north/south massing of distant mountains. Thus three landscape elements are identified in Alcalde's landscape/ builtscape matrix as most influential on settlement form -- as having the most structural or conceptual connection to built features. These are the mesa mass (landscape variable 1, 2, 7, and 13); north/south alignment of river and landmassing (landscape variables 3, 14); and spatial release to the east (landscape variables 4, 6).

In response to these three powerful land features, the settlement has assumed an extremely linear and directed form. Foremost among lineal characteristics is a continuous wall which runs in a north/south direction the entire length of village development. This wall, made of adobe, is higher than eyelevel with a monolithic face -- thus rendering the same sense of visual oppression as previously described in reference to Black Mesa. All views east are blocked by the wall except the continuous edge of Black Mesa which rises above it. Adjacent to and paralleling this wall is the single north/south thoroughfare around which the village is organized. East of the thoroughfare -- the direction of spatial release -- no wall exists and development is sparce (diffuse) thus permitting visual penetration to the distant Sangre-de-Cristo. However, individual buildings maintain their connection to the directed quality of natural space

by aligning parallel with the wall and road -- north/south. North/south settlement configuration/circulation (builtscape variables 1, 12), axial impact of wall (builtscape variables 4, 15), and alignment of buildings (builtscape variable 10) are identified in Alcalde's landscape/builtscape matrix as having the densest network of landscape connections.

*1. directed space defined by monolithic edge of mesa
*2. mesa aligns N/S
*3. Rio Grande flows N/S
*4. spatial release to E
5. views W contained by mesa
*6. vista view of Sangre de Cristo to E
*7. dominant landform to W
8. mesa forms Rio Grande gorge N
9. mesa terminated in valley S
10. mesa fronts W bank of river
11. irrigable land confined to immediate river bank
12. division of irrigated fields in E/W strips (N/S pattern of irrigation)
*13. face of mesa is sheer, unbroken
*14. N/S landmassing
15. Truchas peak to E
16. stratified mesa face
17. ascending landmass hierarchy to E
18. undifferentiated horizontal mesa form

•landscape.

Alcalde

•builtscape.

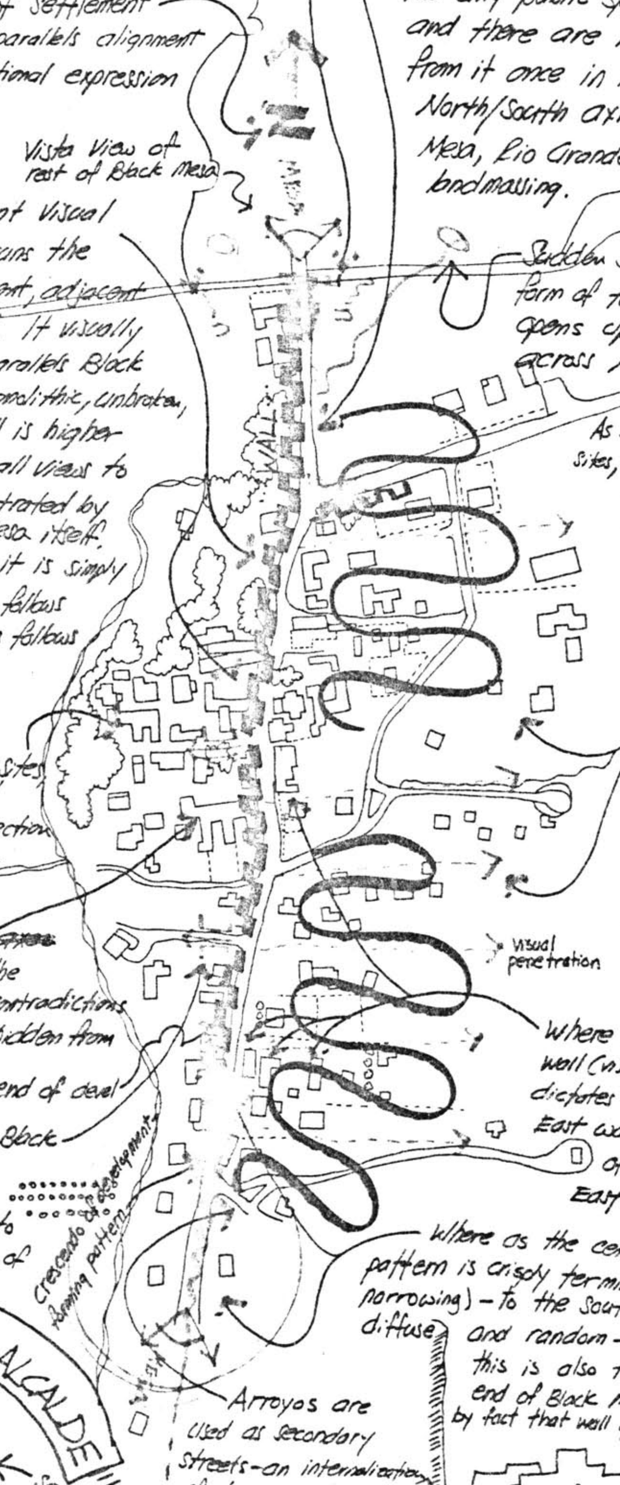
*1. lineal alignment of settlement along N/S axis
2. distribution of density & mass to W of N/S axis
3. diffuse development E of N/S axis
*4. reinforcement of axis with continuous N/S wall
5. views to W contained by wall
6. vista views to E
7. diffuse termination of axis to S
8. crisp termination of axis to N
9. channel views to W via enframed gaps
*10. building alignments E of axis run N/S
11. building alignments W of axis run E/W
*12. circulation in N/S direction
13. audible connection to irrigation ditch
14. stratified quality of frontage W of axis
*15. wall fronts W edge of road
16. E orientation of church sky altar
17. series of ascending walls E of church
18. single horizontal wall W of church
19. E/W alignment of church
20. sheer-faced monolithic wall

Note: The Mesa is so dominant that it subordinates all other landforms and the wall dominates all other buildings

Note: building cornices visible above wall, as well as trees sticking up above wall give the spine a stratified look - like the horizontally layered face of Black Mesa - also Black Mesa itself (visible above wall) adds to this visual impression.

Note: running the length of the wall and visible slightly above it is the continuous line of Black Mesa's ridge - which reinforces the wall's association with Black Mesa.

- irrigation ditch is used to terminate development to North
- Major circulation is in N/S Direction
- Central road is not only the major movement corridor but a central organizing axis for the settlement. It is the only public space, the paved road, and there are no movement alternatives from it once in the town - It is a North/South axis which parallels Black Mesa, Rio Grande and general North/South landmassing.



lineal alignment of settlement along North/South axis, parallels alignment of Black Mesa and directional expression of natural setting

The wall is the dominant visual element in alcalde. It runs the whole length of the settlement, adjacent to, and west of the road. It visually reinforces the axis. It parallels Black Mesa and like it is a monolithic, unbroken, continuous element. The wall is higher than eye level and blocks all views to the west (except those orchestrated by gates) - just like Black Mesa itself. The wall encloses nothing it is simply a sculptural element and follows the road like Black Mesa follows the River.

Sudden sense of openness - lineal form of town terminates crisply and opens up to wall of Black Mesa across North edge of valley

As seen at many other test sites, development in the direction of spatial release - the direction of open expanse - is diffuse - more spread out than that toward Black Mesa. Development East of the axis is diffuse

As seen at many other test sites mass and density are distributed with reference to the west - direction of dominant landform - Black Mesa

Where views to the west are blocked by wall (like views blocked by Black Mesa) - built fabric to East allows views to penetrate - Thus permitting visual connection to distant mtns. (See diagram below) Some of these penetrations permit vista views to East

Behind the wall, building axis runs east/west - following the dictates of irrigation - but the contradictions to Black Mesa's influence are hidden from view.

Wall gets lower toward end of devel

Channeled views focus on Black Mesa

Where building alignments west of wall (visually hidden) follow East/West dictates of irrigation pattern, buildings East wall follow North/South dictates of Black Mesa. (No irrigation East of wall)

Church at Alcalde responds to more distant landforms than rest of settlement, just as at most other test sites

Where as the central axis and development pattern is crisply terminated to North (direction valley narrowing) - to the South, termination is much more diffuse and random - bldgs trail off instead of stop - this is also the direction of valley expanse - end of Black Mesa - open void - This is reinforced by fact that wall get lower & breaks up into fences, etc. toward end of development.

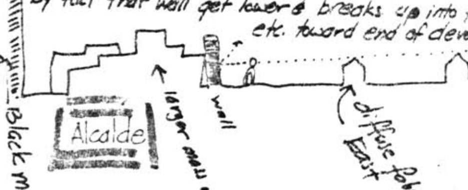
Arroyos are used as secondary streets - an internalization of drainage - but this is not a major feature

Single, low horizontal wall west of church paralleling Black Mesa

East/west align of church - again, church responds to distant landforms & town to more immediate

East orientation of Sky altar (Truchas pk)

Series of mounded walls east of church like series of hills, and mountains in that direction



Alcalde

Scale varies depending on view varies from 5° Form to 45° Texture. Space is defined by dominance of Black Mesa II

- This is a directed space - dominated by eminence linear Mesa which stretches off to horizon.
- Scale is expansive to ~~west~~ east, no sense of containment.
  to west space is contained and dominated by Mesa

Views to North & South are directed by tapering line of Black Mesa thus the views are partially contained the only free vista is to East, a view of Sangre-de Cristo Rio Grande which parallels Black Mesa II provides further linear direction.

TRUCHAS

Truchas is an agricultural village situated on the edge of a mountain plateau (8000 feet) which spreads before the foot of Truchas Peak. The settlement was founded in 1754 and originally named Nuestra Senora del Rosario de Truchas. Today it is noted for its large and reclusive brotherhood of Penitentes (a flagellant confraternity of the Roman Catholic Church). The secretiveness of this religious group has enshrouded Truchas in mystery -- mystery dramatized by the bold, sheer face of Truchas Peak looming high above. Such mystery is further dramatized by precarious siting of this village on the absolute crest of a precipitous slope -- dropping 300 feet off the plateau's southern edge.

Truchas, itself, has assumed a lineal attenuated form which clings to this precipice line as it extends west from the base of Truchas Peak. Association with the precipice is reinforced by the clustering of continuous frontage development adjacent to it and dispersal (randomness) of development away from it. Such a response to a lineal edge is seen at Abiquiu and Alcalde. Further, growth of the village has been primarily in a lineal direction (east/west) along this precipice line and not westward toward open expanses of the plateau. Thus, not

only further reinforcing association with the cliff but preserving limited arable land. Equally influential on village organization is Truchas Peak and its associated hierarchy of land masses. These landforms visually dominate the site and direct all attention east via a crescendo of geologic phenomena which culminate at Truchas Peak itself. Natural direction of views is reinforced by direction of views within the village -- that is, they are channeled east (toward mountains) by enframing development. Breaks in development continuity occur in places where such is needed to preserve and reinforce east/west view orientations. However, views eastward are focused by built and natural features on Truchas Peak while views west are less orchestrated -- more open-vista views. This latter quality parallels definition of Truchas' site by a "U" of land forms north/east/south which opens to a vast spatial release west. This also parallels responses to spatial release seen at San Juan, Santa Clara, and San Ildefenso. Also, development west tends to be less tightly lineated than development east.

Truchas' landscape/builtscape matrix reinforces these observations as three sets of landscape features are identified as most connected (conceptually and structurally) to builtscape features -- those related to the precipice (landscape variables 18, 10, 11); those related to Truchas Peak and east/west references

(landscape variables 7, 8, 9, 3, 12) and those related to functional constraints of the site (landscape variables 12, 2). In response, three sets of builtscape features are identified as most strongly connected to landscape characteristics -- those related to lineated form and lineal pattern of continuous development (builtscope variable 2, 8), those related to alignment/orientation (builtscape variables 3, 4),and those concerning function adaptation to site (builtscape variables 7, 18).

Finally, Truchas village has a small plaza (paralleling natural enclosure) but is not structurally influenced by it -- the plaza is not a central or organizing element. The space seems, instead, to serve Truchas' church, by enframing it and reinforcing its orientation to Truchas Peak. The plaza's small size suggests it is not a space for public event, but a spatial envelope concealing the Penitente church of these secretive people.

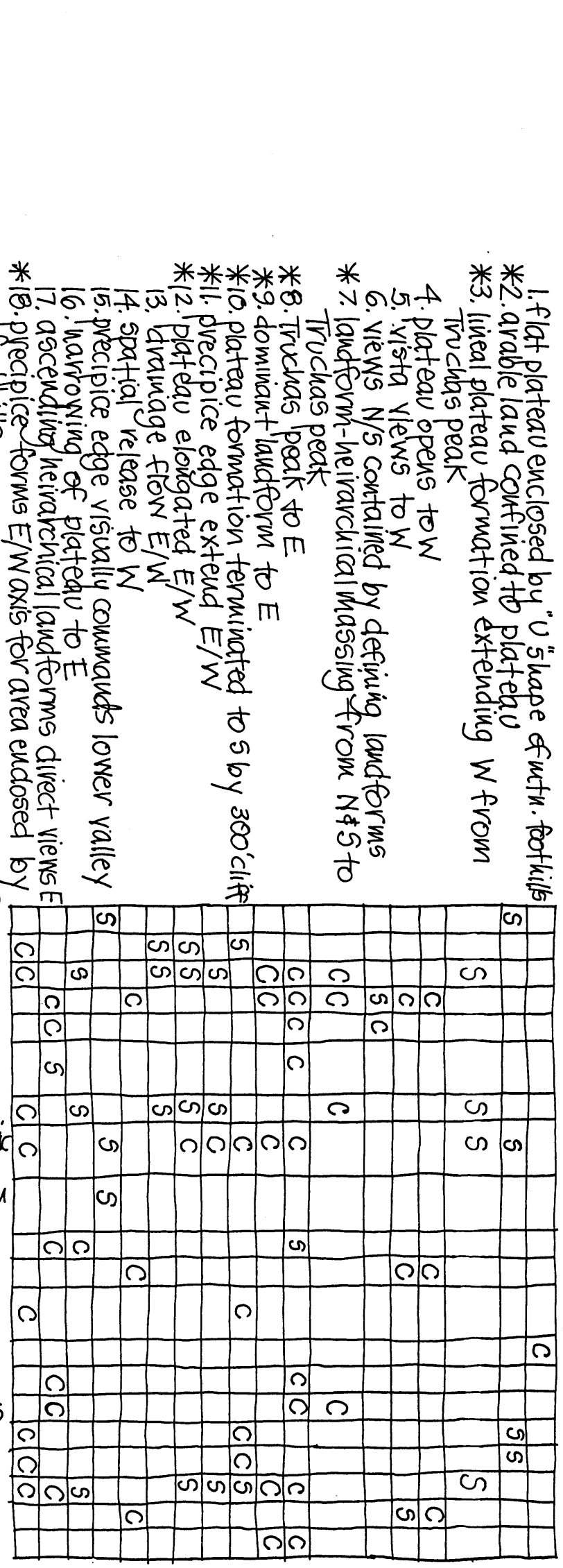
1. flat plateau enclosed by "U" shape of mtn. foothills
*2. arable land confined to plateau
*3. lineal plateau formation extending W from Truchas peak
4. plateau opens to W
5. vista views to W
6. views N/S contained by defining landforms
*7. landform-hierarchical massing from N&S to Truchas peak
*8. Truchas peak to E
*9. dominant landform to E
*10. plateau formation terminated to S by 300' cliff
*11. precipice edge extend E/W
*12. plateau elongated E/W
13. drainage flow E/W
14. spatial release to W
15. precipice edge visually commands lower valley
16. narrowing of plateau to E
17. ascending hierarchical landforms direct views E
*18. precipice forms E/W axis for area enclosed by foothills

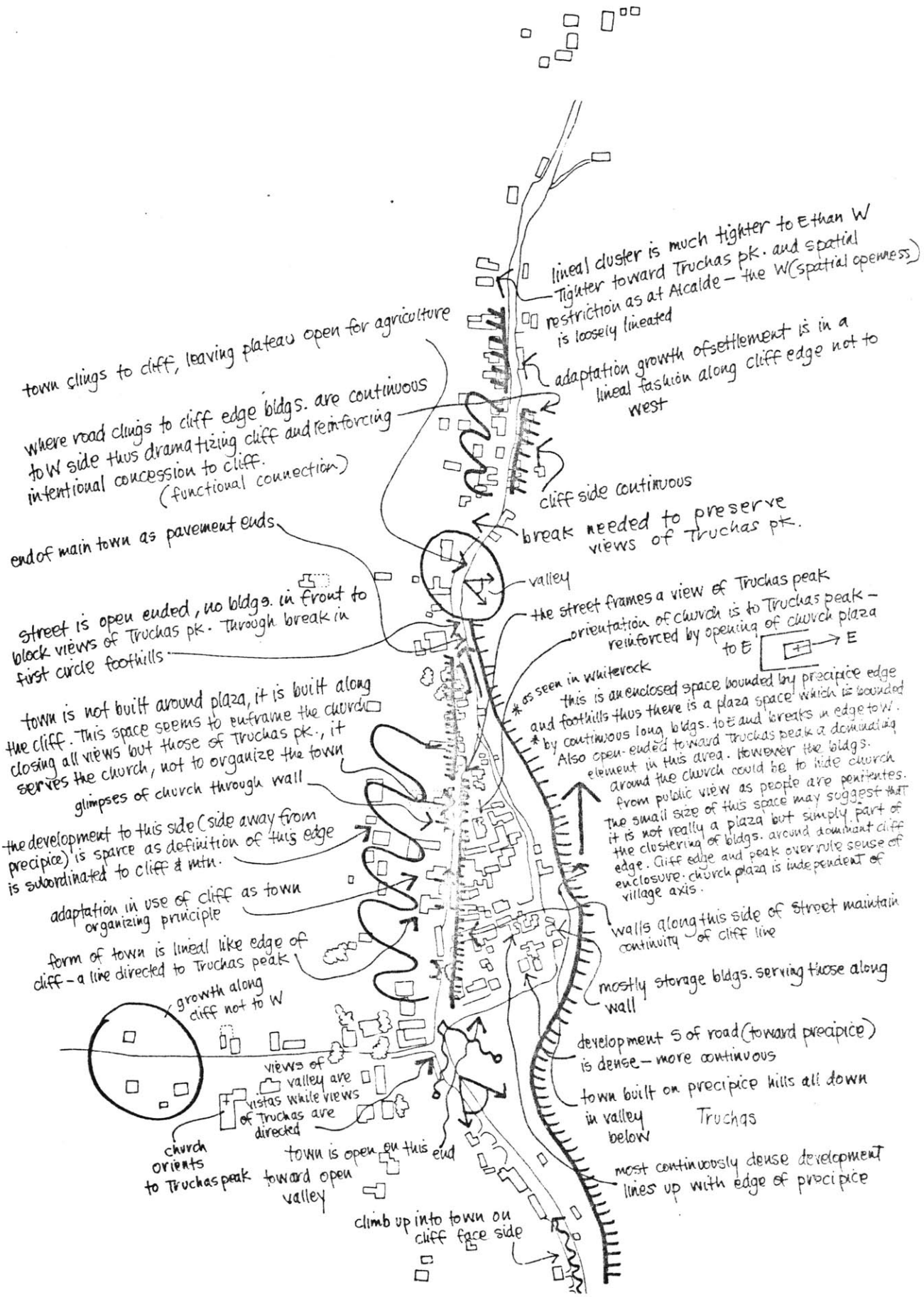
• landscape.

Truchas

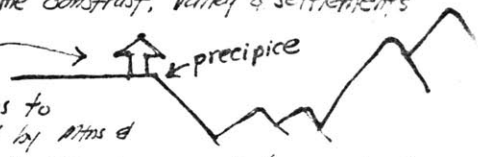
• builtscape •

1. settlement located on extreme S edge of plateau
*2. strong, lineal form of settlement
*3. alignment of lineal form to E/W
*4. directing of views E/W
5. containment of views N/S
6. development continuity break at road bend (permits E penetration of view)
*7. growth in E/W directions
*8. continuous development where built fabric interfaces cliff edge
9. ascending entrance to settlement from south
10. channeled views to E
11. vista views to W
12. walls on S side of road reinforce axis & maintain edge continuity
13. small enclosed plaza about church
14. church plaza open to E
15. church plaza independent of village axis
16. dense clustered development S of road
17. diffuse development N of road
*18. strongly lineated form to E
19. loosely lineated form to W
20. church aligns E




lineal cluster is much tighter to E than W
Tighter toward Truchas pk. and spatial restriction as at Alcalde – the W (spatial openness) is loosely lineated
adaptation growth of settlement is in a lineal fashion along cliff edge not to west
town clings to cliff, leaving plateau open for agriculture
where road clings to cliff edge bldgs. are continuous to W side thus dramatizing cliff and reinforcing intentional concession to cliff. (functional connection)
cliff side continuous
break needed to preserve views of Truchas pk.
end of main town as pavement ends
valley
street is open ended, no bldgs. in front to block views of Truchas pk. Through break in first circle foothills
the street frames a view of Truchas peak
orientation of church is to Truchas peak – reinforced by opening of church plaza to E
E
* as seen in whiterock
this is an enclosed space bounded by precipice edge and foothills thus there is a plaza space which is bounded * by continuous long bldgs. to E and breaks in edge to W. Also open-ended toward Truchas peak a dominating element in this area. However the bldgs. around the church could be to hide church from public view as people are penitentes. The small size of this space may suggest that it is not really a plaza but simply part of the clustering of bldgs. around dominant cliff edge. Cliff edge and peak overrule sense of enclosure: church plaza is independent of village axis.
town is not built around plaza, it is built along the cliff. This space seems to enframe the church closing all views but those of Truchas pk., it serves the church, not to organize the town
glimpses of church through wall
the development to this side (side away from precipice) is sparce as definition of this edge is subordinated to cliff & mtn.
adaptation in use of cliff as town organizing principle
walls along this side of street maintain continuity of cliff line
form of town is lineal like edge of cliff – a line directed to Truchas peak
growth along cliff not to W
mostly storage bldgs. serving those along wall
development S of road (toward precipice) is dense – more continuous
views of valley are vistas while views of Truchas are directed
town built on precipice hills all down in valley below
Truchas
church orients to Truchas peak
town is open on this end toward open valley
most continuously dense development lines up with edge of precipice
climb up into town on cliff face side

• Type of space: a plateau bounded on three sides by mtn foothills & on the south by a steep precipice and valley. Space defined by dominating truchas Peak and directed by lineal precipice edge - these are the strongest elements on the otherwise dimensionless plateau. Entry to plateau is gained by climbing precipice to south and/or descending ~~sandhills~~ foothills to North. Foothills as a strong boundary are negated in the flatness of plateau which in a convoluting landscape makes an extreme constrast. Valley & settlements to south are lower than edge of precipice - Town sits above them →



• plateau space is elongated East/west - Tapers East - becomes constricted by convoluting land surface

• hills are green and undulating - tree covered which further contrasts with cultivated grassy plateau

• Scale: scale is intermediate as vistas to North, East & South are contained by mtns & foothills - however scale to west is expansive and terminated by vistas of distant clemex mtns.

Gap with view of Truchas Peak

dominant Truchas Peak.

Dominant element of this setting is truchas peak. View to west is so distant that it can not compete with truchas. but west is open

*the precipice edge runs E/W & reinforces the whole E/W orientation of this space - The valley ran E/W & north & South platform definition runs E/W - plateau aligns E/W

plateau

These hills are lower than edge of precipice thus South is more expansive than drawing suggests.

View of valley

Steep precipice

W- spatial release

E view dominated by truchas peak

Expansive vista

*North and South are bounded by first ring landforms and South is doubly bound by precipice edge. like Black mesa at alcalde, precipice edge gives this pace a directed quality which extends East/West - West to gentle of Rio Grande Valley below and distant clemex and East to truchas peak which visually dominates setting

* to East, landforms ascend from foothills into mtns - a heirarchy as it moves away from you. Also, defining landforms North & South build up in heirarchial masses - culminating due East in Truchas peak. Thus, there is a visual direction East as one's view is caught by, and directed by this heirarchy. →

TRUCHAS

RANCHO-DE-TAOS

Driving south on U.S. 85 from Taos, the surrounding landscape (west and southwest) seems flat, open and empty -- while east/south and north one is nestled in an alcove of majestic mountains. Flowing from these mountains, the Rio Rancho has cut a dish-shaped channel in that flat expanse to the west -- a channel which remains unnoticed until one is at its very edge. Being symmetrical about the Rio Rancho, this channel depression provides excellent conditions for irrigated agriculture, and this is most likely the reason why Spanish settled here in 1716.[1] Unique about the site is its parallel and concentric definition by two sets of natural phenomena. First is a continuous, hard-edged rim of the Rio Rancho depression which creates a "U" shaped definition north/east/south and is open to the west. Likewise the mountains, which visually dominate this setting, establish a second and concentric "U" on the north/east/south and is also open to the west. Further, these mountains form a hierarchial landmassing which builds up from the north and south to a culminating gap, southeast -- this gap being a channel for the Rio Rancho. These features of dual concentric definition,

---

1. Pearce, T.M., New Mexico Place Names -- A Geographical Dictionary, Albuquerque, University of New Mexico Press, 1965.

and orientation to the southeast are described in Rancho de Taos' landscape/builtscape matrix by landscape variables 2, 4, 6, 14, and 21. As the matrix illustrates, these variables are most influential on settlement form -- that is, they are connected (conceptually or structurally) to more builtscape features than other landscape variables. In response to this, builtscape variables 2, 3, , 11, and 24; which describe the quality of plaza and churchyard enclosure as well as their concentric relationship, are identified as having the densest network of connections to natural features.

While concentric positioning of church and plaza enclosures is recognizable, it is not geometrically accurate which, assuming a need for rationalizing deviations from balanced symmetry, would suggest that each is responding to different detrminants. This would reinforce our association of Rancho de Taos' plaza with the depression and the church enclosure with adjacent mountains. Further, deviations from accurate concentrism within the settlement parallel the deviations that exist between mountains and channel.

The Spanish word "Rancho" means village,and "Rancho de" is a Spanish equivalent of the English "Suburb of." When completed in 1779, the village was hardly a physical suburb of Taos. Yet, recent commercialization of U.S. 85 has innundated

our test site with retail development related to Taos' tourist business. This innundation is recognizable by its tourist related use and architectural style -- that being the typical concrete block or wooden commercial frontage of most speculative strip development. U.S. 85 does not run through the village but tangential to it thus allowing us to separate Rancho de Taos from development which emanates from another population center. For this reason, we were able to identify the west edge of Rancho de Taos' plaza as open, instead of closed.

Frequent Comanche raids of the 18th century surely influenced development of Rancho de Taos' plaza about the Church of St. Francis. However, parallels between built and natural features, as described above, explain other aspects of settlement form; such as siting, alignment and space articulation. These aspects of the built fabric do <u>not</u> parallel the geometric precision characteristic of military architecture. Many of the landscape qualities present at Rancho de Taos are similar to those at Taos Pueblo, and archaeological evidence reveals that Taos Indians resided here in pre-Spanish time.

Ranchos de Taos

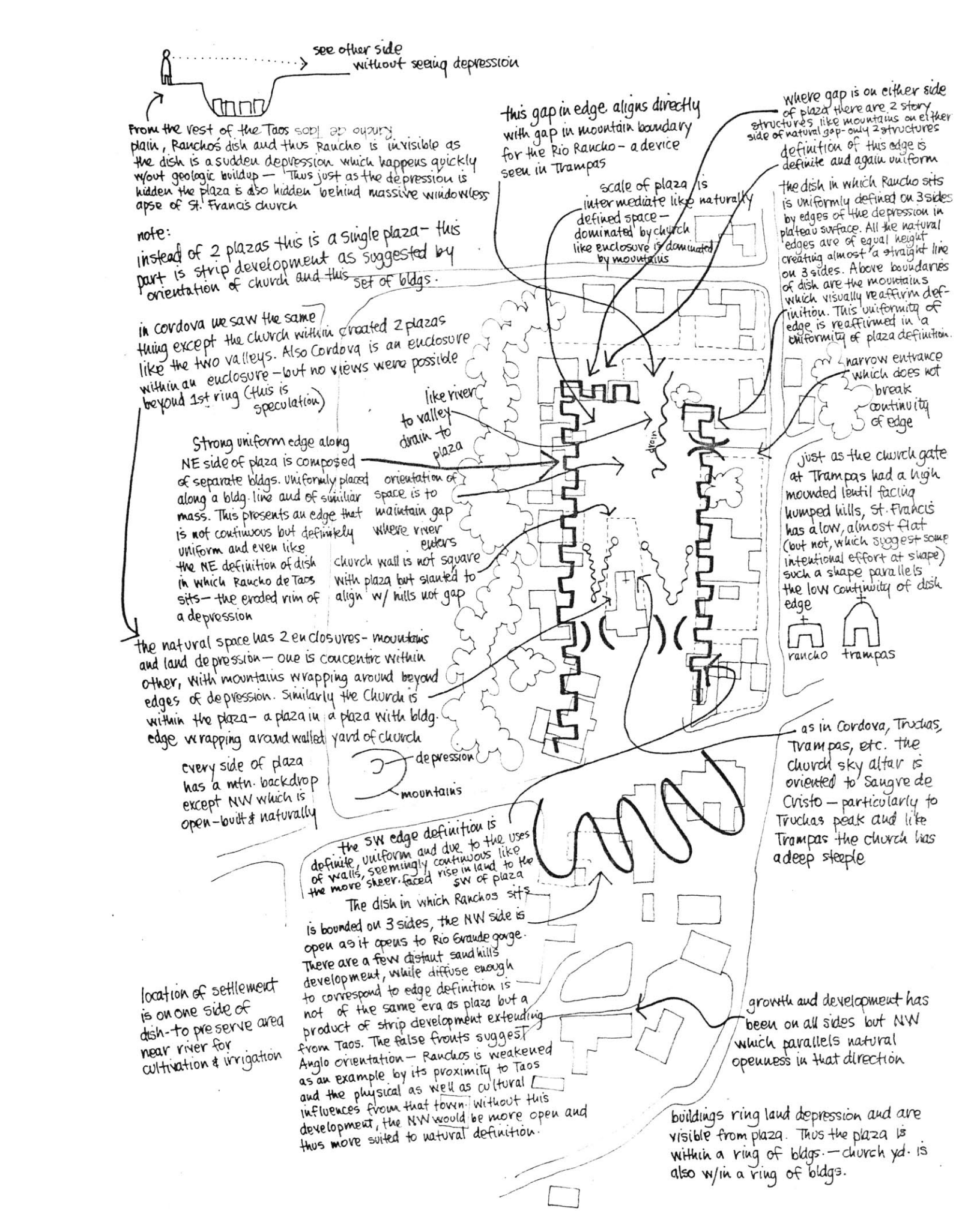
•landscape•

1. space defined by dish depression of Taos plain
*2. depression forms a U to N/E/S
3. depression opens to NW
*4. concentric U of mtn. landforms to N/E/S
5. gap in natural edge to SE
*6. gap in mtn. massing to E
7. river enters space thru gap & bisects depression
8. uniform-continuous natural edge
9. uniform-continuous mountain massing
10. flat, open depression space
11. dish, elongated space
12. river flow NW/SE
13. depression conceals valley from Taos plain
*14. mtns. SE visually dominate depression
15. mtn. definition opens to NW
16. irrigable land confined to depression
17. alignment of space NW/SE
18. dominant landforms to SE & E
19. irrigation pattern NW/SE
20. views contained by mtns. N/E/S by mtns.
*21. views directed E by mtn. massing-perspective

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		C																						
2		C	C								C											C		C
3				C																				
4		C	C								C											C		C
5						C																	C	
6							C	C							C	C							C	
7													C			C								
8			C		C												C		C					
9			C		C														C					C
10												C												
11		C									C													
12									S									C			S			
13										C														C
14								C	C		C			C										
15											C													
16	S																			S				
17							S		S									S			S			
18							C		C					C										
19									S									S			S			
20																						C		
21							C	C		C				C		C							C	

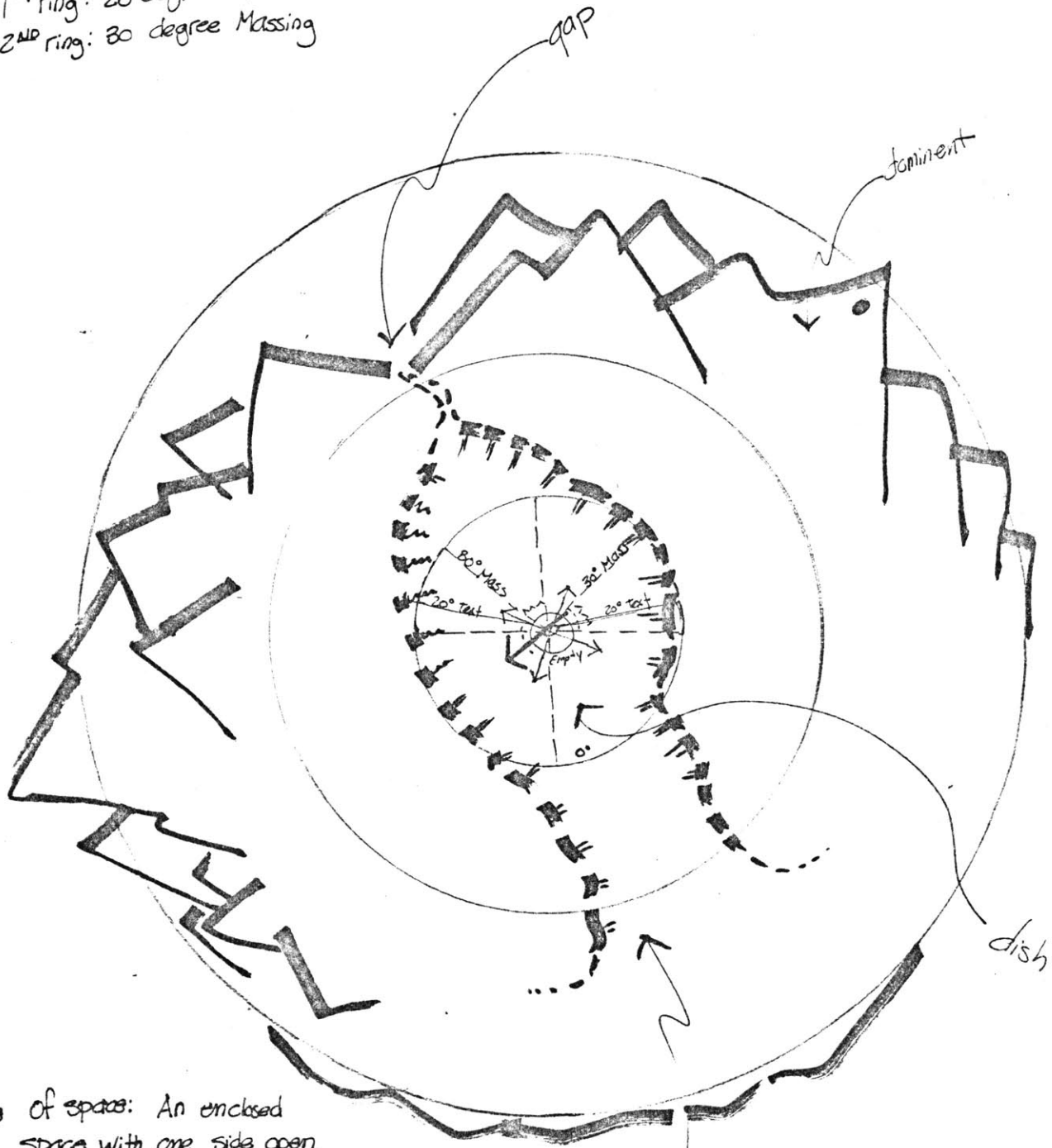
•builtscape•

1. location of settlement on N edge of dish space
*2. elongated, enclosed plaza space
*3. plaza defined by a continuous u-shaped edge to N/S/E
4. plaza open to NW
5. uniform height and strength of plaza edge
6. enframed gap in SE edge
7. church aligns E
8. church alignment independent of plaza
*9. growth to SE
10. church apse conceals plaza
*11. enclosed u-shaped church yard
12. open flat plaza
13. drainage enters plaza thru SE gap
14. church dominates plaza enclosure
15. double spire church form
16. gate in church yard to E
17. flat lentil church gate
18. plaza aligns NW/SE
19. continuous wall around church yard
20. confinement of growth to edge
21. breakdown of plaza geometry to SE
22. views contained N/W/S
23. views directed E
*24. church yard concentric within plaza


see other side without seeing depression
From the west of the Taos soda ash expanse plain, Ranchos dish and thus Rancho is invisible as the dish is a sudden depression which happens quickly w/out geologic buildup — Thus just as the depression is hidden the plaza is also hidden behind massive windowless apse of St. Francis church
note:
instead of 2 plazas this is a single plaza- this part is strip development as suggested by orientation of church and this set of bldgs.
in cordova we saw the same thing except the church within created 2 plazas like the two valleys. Also Cordova is an enclosure within an enclosure — but no views were possible beyond 1st ring (this is speculation)
this gap in edge aligns directly with gap in mountain boundary for the Rio Rancho - a device seen in Trampas
where gap is on either side of plaza there are 2 story structures like mountains on either side of natural gap- only 2 structures
definition of this edge is definite and again uniform
scale of plaza is intermediate like naturally defined space — dominated by church like enclosure is dominated by mountains
the dish in which Rancho sits is uniformly defined on 3 sides by edges of the depression in plateau surface. All the natural edges are of equal height creating almost a straight line on 3 sides. Above boundaries of dish are the mountains which visually reaffirm definition. This uniformity of edge is reaffirmed in a uniformity of plaza definition.
narrow entrance which does not break continuity of edge
like river to valley drain to plaza
drain
Strong uniform edge along NE side of plaza is composed of separate bldgs. uniformly placed along a bldg. line and of similiar mass. This presents an edge that is not continuous but definitely uniform and even like the NE definition of dish in which Rancho de Taos sits — the eroded rim of a depression
orientation of space is to maintain gap where river enters
church wall is not square with plaza but slanted to align w/ hills not gap
just as the church gate at Trampas had a high mounded lentil facing humped hills, St. Francis has a low, almost flat (but not, which suggest some intentional effort at shape) such a shape parallels the low continuity of dish edge
rancho
trampas
the natural space has 2 enclosures - mountains and land depression — one is concentric within other, with mountains wrapping around beyond edges of depression. Similarly the Church is within the plaza - a plaza in a plaza with bldg. edge wrapping around walled yard of church
every side of plaza has a mtn. backdrop except NW which is open-built & naturally
depression
mountains
as in Cordova, Truchas, Trampas, etc. the church sky altar is oriented to Sangre de Cristo — particularly to Truchas peak and like Trampas the church has a deep steeple
the SW edge definition is definite, uniform and due to the uses of walls, seemingly continuous like the more sheer-faced rise in land to the SW of plaza
The dish in which Ranchos sits is bounded on 3 sides, the NW side is open as it opens to Rio Grande gorge. There are a few distant sand hills development, while diffuse enough to correspond to edge definition is not of the same era as plaza but a product of strip development extending from Taos. The false fronts suggest Anglo orientation — Ranchos is weakened as an example by its proximity to Taos and the physical as well as cultural influences from that town. Without this development, the NW would be more open and thus more suited to natural definition.
location of settlement is on one side of dish - to preserve area near river for cultivation & irrigation
growth and development has been on all sides but NW which parallels natural openness in that direction
buildings ring land depression and are visible from plaza. Thus the plaza is within a ring of bldgs. — church yd. is also w/in a ring of bldgs.

Rancho de Taos

1st ring: 20 degree Texture
2nd ring: 30 degree Massing



Type of space: An enclosed space with one side open. Space is enclosed by two rings of natural phenomena – edge of depression in taos plain and "horse shoe" of mountains. Both are visible in views the mountains are visually dominating but views of mtns. to North is limited – most prominent view is to East. View to West is open, vast Cone can see distant mtns. North of Truchas range.

Scale: enclosure is a first ring phenomena thus scale is ~~inter~~ ~~sp~~ small, first ring is dramatized by houses built on edge of dish. However, Mountains are visually so strong that they pull the eye also above edge of dish and expand the scale – They are so dominant ~~that~~ scale becomes intermediate.

PLACITAS

Placitas is a small mountain village located in a valley of the Rio Pueblo about four miles east of Picuris. Typical of mountain villages, agriculture is the economic base of this community. However, high altitude places considerable climatic constraint on agricultural diversification. Wheat, particularly hardy spring wheat, is the main crop.[1] Another serious constraint has been imposed by the Forest Service which now manages vast areas (Pecos Wilderness) formerly held as common grazing land by mountain villages. This land was set aside in the Spanish landgrant system as "terreno publico." Under the Forest Service, grazing restrictions (limited and expensive grazing permits) and administrative preference for recreational and commercial timber use, has literally ended centuries of agricultural tradition and threatens the future of this self-providing culture.[2]

Placitas, like Cordova and Las Trampas, is very much influenced by drainage patterns within its landscape setting. The plaza of this village (its very name means "little plaza") sits nestled in a "U" shape of mountain foothills (which it parallels with a "U" shaped enclosure) and astride a major drainage channel. Water flowing from a narrow gap in hills immediately north of the village courses downhill -- through the

---

1. Weigle, Martha, Hispanic Villages of Northern New Mexico, Santa Fe Jene Lyon Publishers, 1975 (reprint of 1935 study), p. 206.
2. Nichols, John, The Milagro Beanfield War, New York, Ballantine Books, 1976.

sloping plaza -- and continues south to the Rio Pueblo. While draining through the plaza, water must divert on either side of Placitas' Chapel of The Assumption -- which faces this oncoming flow with a rounded adobe apse. Forming a gap at its north end, like that in the hills behind, Placitas' plaza widens southward as the pattern of drainage also widens. In addition, to water flow, mountains southward provide other reference points to which the church responds (as seen at many other test sites) with a north/south alignment.

Reinforcing these observations, Placitas' landscape/builtscape matrix identifies three landscape characteristics as connected (conceptually and structurally) to a larger number of builtscape variables. These are the "U" of defining foothills (landscape variable 2),gaps in natural edges north and south (landscape varables 4, 5) and pattern of drainage (landscape variables 9, 10, 11). Paralleling the above description, two builtscape characteristics are identified as most frequently connected to landscape features -- those describing plaza shape (builtscape variables 5, 14, 6) and those describing the church (builtscape variables 9, 15).

Unlike most other test sites, the valley floor of this setting slopes significantly toward its center -- the Rio Pueblo. This slope is a noticable quality of the plaza itself

and another constraint on local agriculture. Thus, farming and building on a steep slope would dramatize the importance of drainage in this setting and perhaps lessen influences of the river. A settlement organized parallel to drainage instead of across it would certainly be more suitable to high run-off conditions. Further, this being a mountain elevation -- a higher life/climatic zone -- rain would be more frequent.

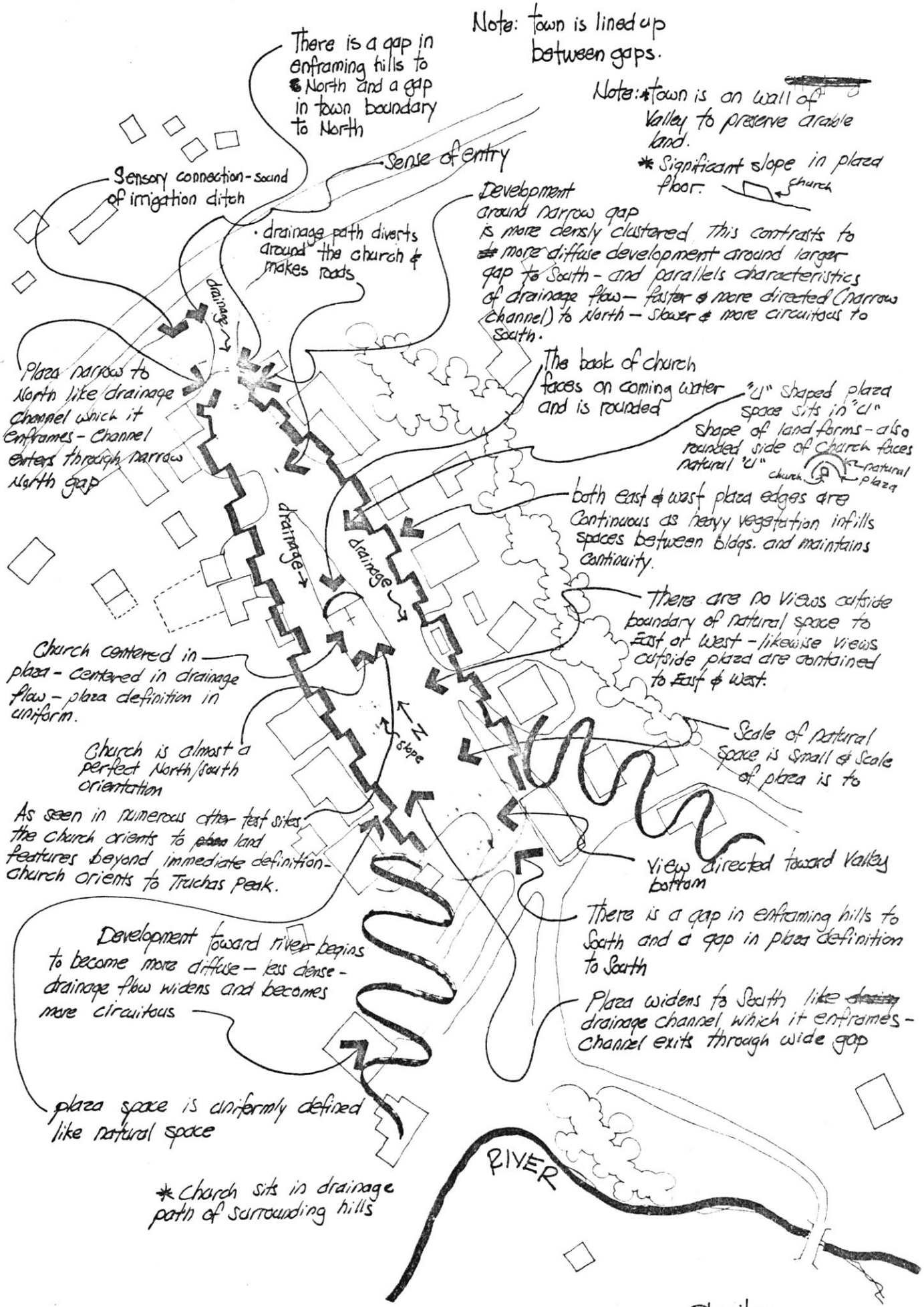
Placitas

• landscape •

1. enclosed valley space
*2. landforms N/E/W forms U-enclosure about village
3. landforms S form linear edge
*4. gap in landform to S
*5. gap in landform to N
6. valley floor - steep slope to central river
7. river bisects valley separating edge formations
8. view contained by landforms
*9. drainage flows N/S
*10. drainage flows from N & S gap to river
*11. drainage pattern widens toward river
12. small valley area
13. arable land limited to valley bottom
14. ascending landforms convey sense of mtns. to S
15. uniform definition of valley space
16. dominant landfeatures N & S
17. drainage converges in valley

• built scape •

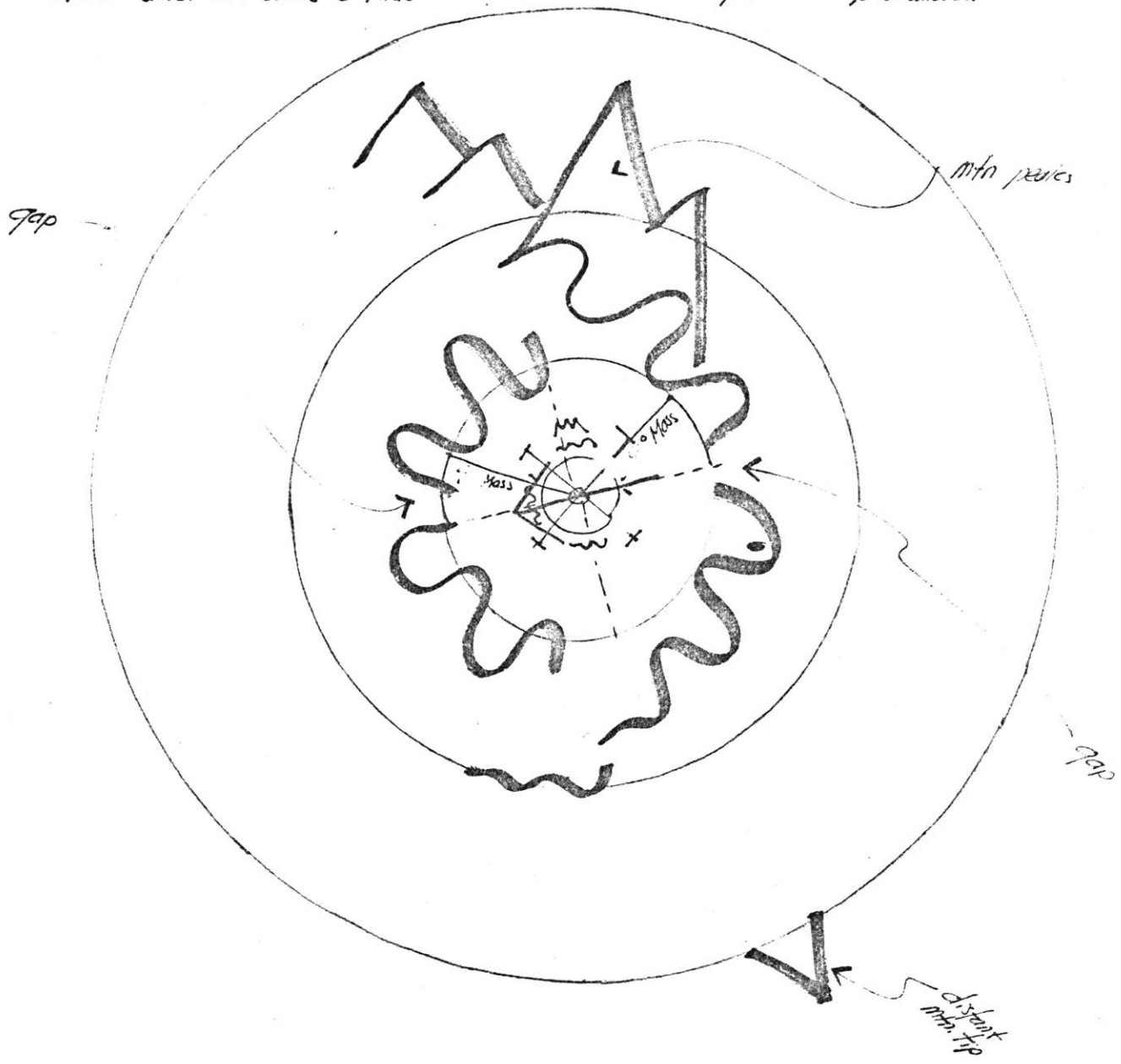
1. central enclosed plaza space
2. plaza space expands to S (widens)
3. noise of irrigation ditch in plaza
4. uniform definition of plaza along E/W
*5. plaza space narrows to gap on N
*6. elongated plaza along N/S axis
7. drainage converges in plaza and runs length of plaza
8. distribution of density to N
*9. N facade of church is rounded
10. settlement located on valley wall
11. plaza slopes downhill to S
12. church sky altar faces S
13. church aligns N/S
*14. plaza opens to S
*15. church centered in plaza
16. breakdown of geometry along plaza edge
17. views directed N/S


Note: town is lined up between gaps.
There is a gap in enframing hills to North and a gap in town boundary to North
Note: *town is on wall of Valley to preserve arable land.
* Significant slope in plaza floor.
church
Sense of entry
Sensory connection - sound of irrigation ditch
Development around narrow gap is more densly clustered this contrasts to more diffuse development around larger gap to South - and parallels characteristics of drainage flow - faster & more directed (narrow channel) to North - slower & more circuitous to South.
drainage path diverts around the church & makes roads
drainage
Plaza narrow to North like drainage channel which it enframes - Channel enters through narrow North gap
The back of church faces on coming water and is rounded
"U" shaped plaza space sits in "U" shape of land forms - also rounded side of church faces natural "U"
church
natural
plaza
both east & west plaza edges are continuous as heavy vegetation infills spaces between bldgs. and maintains continuity.
drainage
drainage
There are no views outside boundary of natural space to East or West - likewise views outside plaza are contained to East & West.
Church centered in plaza - centered in drainage flow - plaza definition in uniform.
Scale of natural space is small & scale of plaza is to
Church is almost a perfect North/South orientation
slope
As seen in numerous other test sites - the church orients to land features beyond immediate definition - church orients to Truchas Peak.
View directed toward Valley bottom
There is a gap in enframing hills to South and a gap in plaza definition to South
Development toward river begins to become more diffuse - less dense - drainage flow widens and becomes more circuitous
Plaza widens to South like drainage channel which it enframes - channel exits through wide gap
plaza space is uniformly defined like natural space
RIVER
* Church sits in drainage path of surrounding hills

Placitas

Space- This is an enclosed space bound by two horse shoe shapes of mtn foothills. To the East & West are gaps which permit Rio Pueblo to enter & exit. To the North and South are breaks in the continuity of surrounding hills. To the Southwest are mtn. peaks. Valley is further defined by contrast in texture - cultivated vs. wooded. Valley has a pitched rather than flat floor

Scale- Scale of space is very intimate and one can hear sounds of people working on the other side. all views outside enclosure are blocked by natural panorama.



Placitas

CORDOVA

Cordova was founded in 1751 near the ruins of an old Pueblo -- Pueblo Quemado. Its present population of 450 to 500 [1] is tightly nestled in a small valley southeast of, and downhill from Truchas. Limited land, poor soil and the Hispanic tradition of equal inheritance, has reduced individual landholdings to a maximum of 4.5 acres. Thus, the traditional agricultural economy, seen at other test sites, is giving way to commuter employment in Los Alamos and Espanola. Physical limitations of Cordova's site have been influential on settlement form as evidenced by a large number of structural relationships in Cordova's landscape/builtscape matrix. Also influential are the drainage characteristics as seen at Placitas and Rancho-de-Taos. Cordova's small valley is a long attenuated space (aligned east/west) bisected by the Rio Quemado and narrowed in the middle -- thus forming an hourglass shape. Rio Quemado is actually the result of numerous drainage ways and creeks which flow from mountains to the east and converge at Cordova to form this water way. Thus, while embankments defining north and south valley walls are continuous single landforms -- the east valley edge is a maze of rolling hills eroded by

---

1. Ottoway, Harold N. , ed., Papers in Anthropology Vol II., Norman, University of Oklahoma Press, Spring 1970.

drainage channels. To the west, Cordova's valley forms a narrow, rockwall, gorge. Within the valley, all visual connection to an outside world is blocked by steep embankments, but a hierarchial ascension of hills to the east implies a sense of mountains beyond, even though they are not actually visible.

Although site constraints create a need for structural landscape relationships, Cordova maintains,within its central plaza, conceptual relationships to this setting. These conceptualizations are expressed in treatment of plaza edges, shape of plaza space and treatment of drainage. Just as riverlettes flowing through a maze of eroded hills converge to form the Rio Quemado, numerous drainage channels flowing through a maze of zig-zag alleys converge in Cordova's plaza. The dense cluster of buildings which form these alleys, define the plaza's east edge -- just as numerous hills define the valley's east edge. A church sited in the plaza's center, divides this east/west elongated space into two open areas connected by a narrow corridor in the center. Further, the plaza's west edge narrows to a single exit -- an exit lined by walls of continuous built frontage. Finally, the church , geometrically independent of plaza inter-relationships, aligns directly with Truchas Peak to the east. Thus, as seen in many other examples, the

church reaches beyond immediate landscape conditions for organizational reference.

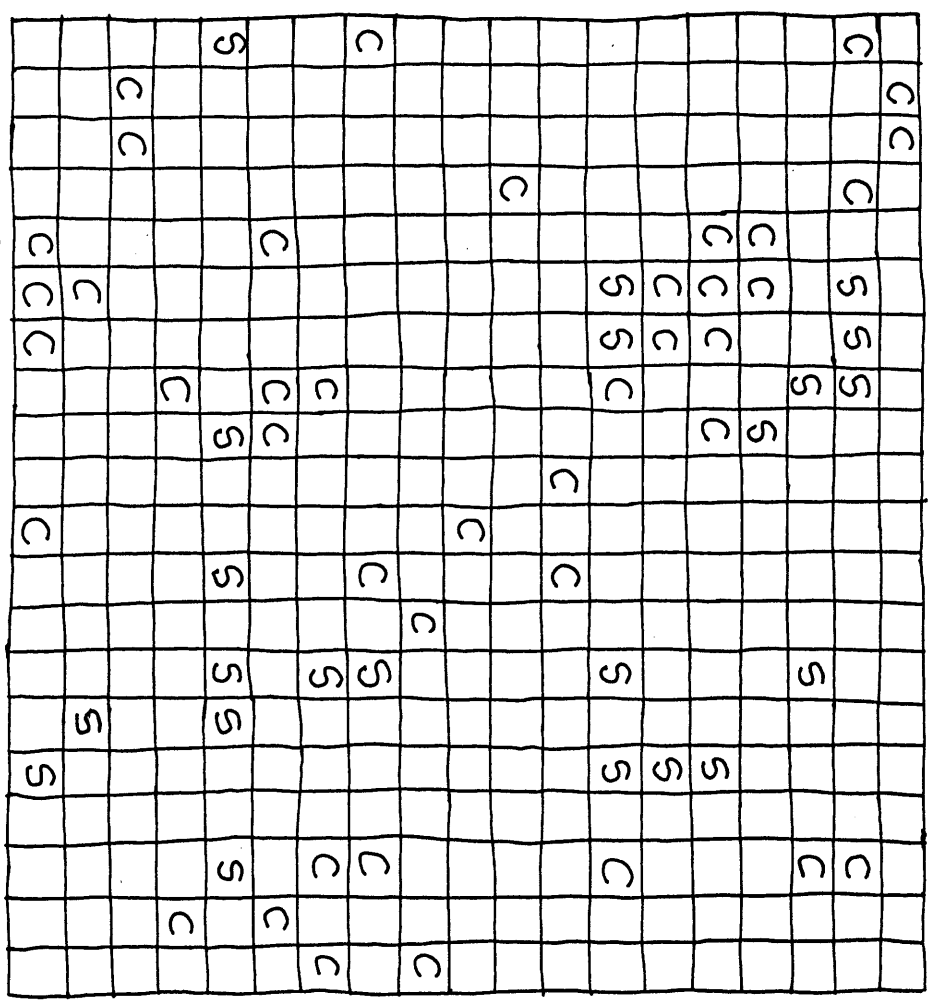
These observations of landscape conceptualization are reinforced by Cordova's landscape/builtscape matrix. Four sets of landscape variables are identified as most frequently connected (conceptually or structurally) to builtscape features -- those concerning drainage (landscape variables 7, 19, 5), those concerning valley shape (landscape variables 2, 12), those related to site constraints (landscape variable 15), and those related to references and alignments (landscape variables 3, 13, 14). Likewise, four sets of built features are identified as having the most dense network of landscape relationships -- those related to treatment of drainage (builtscape variables 5, 6, 7, 16), those concerning adaptation to site (builtscape variable 9), those related to alignments (builtscape variables 8, 18, 14) (some of these can also be considered site adaptations), and those related to plaza shape (builtscape variable 12).

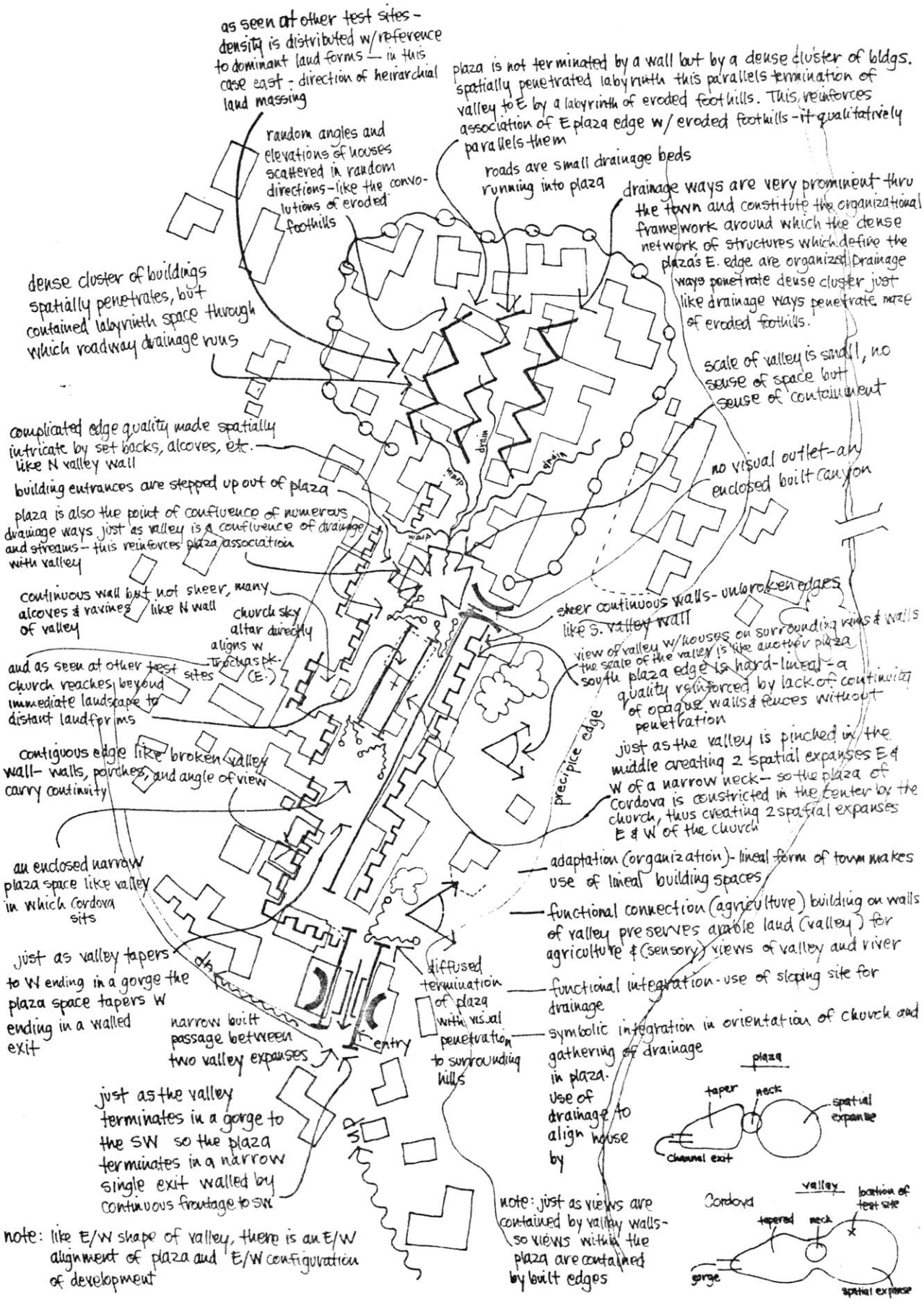
1. valley necked in center
*2. enclosed, elongated, narrow valley space
*3. E/W orientation of valley shape
4. numerous hills define E edge of valley
*5. E hills eroded by numerous streams, etc.
6. waterways from hills converge in valley
*7. drainage flow E/W
8. S/W valley terminates in a gorge (rock)
9. views contained by landforms of valley
10. N valley edge, continuous with ravines
11. S edge, continuous land form-unbroken
*12. W. valley narrows to gorge
*13. defining elements parallel E/W landforms
*14. ascending hills (E) convey sense of this. E
*15. scale of valley space is small
16. Trucnas peak highest mtn., due E
17. neck divides valley in two spatial expanses
18. irrigated, arable valley floor
*19. drainage converges in valley
• landscape.

Cordova

• builtscape.

1. enclosed, narrow, elongated plaza
2. plaza divided in two spatial expanses
3. narrowing of plaza about church
4. views contained within plaza
*5. E edge defined by dense building cluster
*6. penetration of cluster by drainage beds
*7. drainage converges in plaza space
*8. distribution of density to E
*9. breakdown of plaza geometry to E
10. continuous frontage walls SW plaza break
11. contiguous penetrated edge on N plaza
*12. west plaza narrows to single break
13. continuous/unbroken edge on S plaza
*14. E/W configuration of development
15. settlement sited on valley wall
*16. roads follow drainage paths
17. entrances stepped up out of plaza
*18. plaza elongated E/W
19. church sky altar faces E
20. S edge hard-lineal



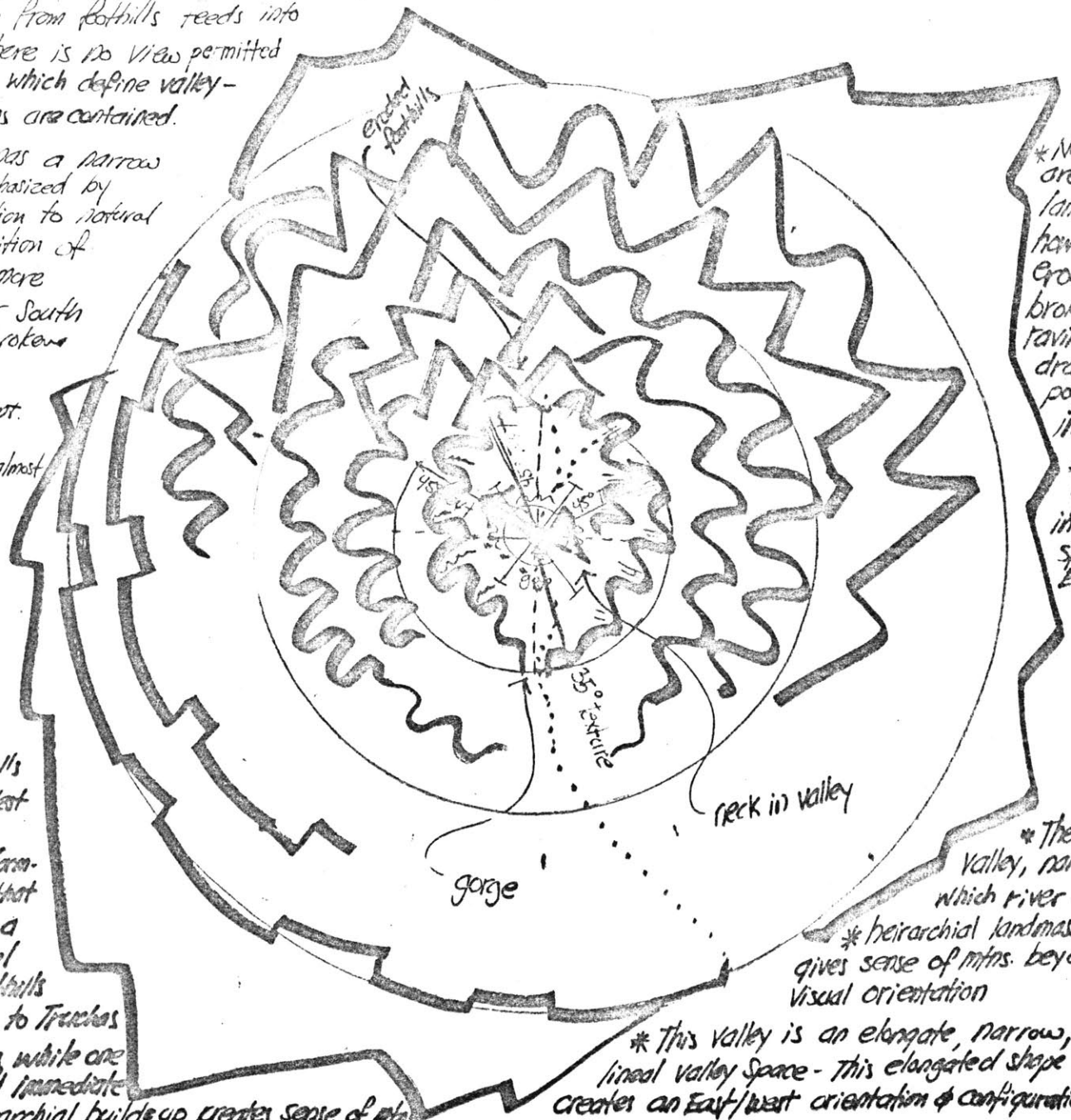

as seen at other test sites - density is distributed w/reference to dominant land forms — in this case east - direction of heirarchial land massing
plaza is not terminated by a wall but by a dense cluster of bldgs. spatially penetrated labyrinth this parallels termination of valley to E by a labyrinth of eroded foothills. This reinforces association of E plaza edge w/ eroded foothills - it qualitatively parallels them
roads are small drainage beds running into plaza
drainage ways are very prominent thru the town and constitute the organizational framework around which the dense network of structures which define the plaza's E. edge are organized. Drainage ways penetrate dense cluster just like drainage ways penetrate maze of eroded foothills.
random angles and elevations of houses scattered in random directions - like the convolutions of eroded foothills
dense cluster of buildings spatially penetrates, but contained labyrinth space through which roadway drainage runs
scale of valley is small, no sense of space but sense of containment
complicated edge quality made spatially intricate by set backs, alcoves, etc. like N valley wall
building entrances are stepped up out of plaza
no visual outlet - an enclosed built canyon
plaza is also the point of confluence of numerous drainage ways just as valley is a confluence of drainage and streams - this reinforces plaza association with valley
continuous wall but not sheer, many alcoves & ravines like N wall of valley
church sky altar directly aligns w Tres Cruces pk. (E.)
sheer continuous walls - unbroken edges like S. valley wall
view of valley w/houses on surrounding hills & walls
the scale of the valley is like another plaza
south plaza edge is hard-lined - a quality reinforced by lack of continuity of opaque walls & fences without penetration
and as seen at other test sites church reaches beyond immediate landscape to distant landforms
precipice edge
just as the valley is pinched in the middle creating 2 spatial expanses E & W of a narrow neck — so the plaza of Cordova is constricted in the center by the church, thus creating 2 spatial expanses E & W of the church
contiguous edge like broken valley wall - walls, porches, and angle of view carry continuity
an enclosed narrow plaza space like valley in which Cordova sits
adaptation (organization) - lineal form of town makes use of lineal building spaces
functional connection (agriculture) building on walls of valley preserves arable land (valley) for agriculture & (sensory) views of valley and river
just as valley tapers to W ending in a gorge the plaza space tapers W ending in a walled exit
diffused termination of plaza with visual penetration to surrounding hills
functional integration - use of sloping site for drainage
symbolic integration in orientation of church and gathering of drainage in plaza. use of drainage to align house by
narrow built passage between two valley expanses
entry
plaza
taper
neck
spatial expanse
channel exit
just as the valley terminates in a gorge to the SW so the plaza terminates in a narrow single exit walled by continuous frontage to SW
note: just as views are contained by valley walls - so views within the plaza are contained by built edges
Cordova
valley
location of test site
tapered
neck
gorge
spatial expanse
note: like E/W shape of valley, there is an E/W alignment of plaza and E/W configuration of development

This is a contained space bounded on four sides by undulating, continuous & uniform foothills. There are a series (labyrinth) of ravines to the East as drainage from foothills feeds into this valley. There is no view permitted beyond landfeatures which define valley - views in all directions are contained.

. Valley has a narrow floor which is emphasized by contrast of cultivation to natural pinon cover. Definition of edge to west is more broken than N. or South but still strong - broken by water erosion. No edge is dominant.

Scale: is intimate, almost the scale of a plaza itself. 45° Texture on ~~3~~ 3½ sides

Note: Hills to the South are more steep



* Confluence of drainage is an important characteristic of this site

* North South valley walls are single horizontal landmasses. East-valley however is a series of eroded foothills which are broken by a labyrinth of ravines - carrying numerous drainage ways to a point of confluence in the valley

* The valley is hour glass shaped - constricted in the middle - Thus, two spatial expanses exist ⊕ East & West of this narrows.

- This is a contained space bounded by high hills & mtns.
- Scale is very human like a large plaza

* The western portion of valley, narrows to a gorge through which river exits.

* heirarchial landmassing to East not only gives sense of mtns. beyond but creates a visual orientation

* This valley is an elongate, narrow, lineal valley space - This elongated shape creates an East/West orientation & configuration.

* North/South valley walls are elongated East/West landmasses.

* Valley space is unformally defined, except that to the East, there is a sense of heirarchial landmassing as foothills begin to build up to Truchas Peak beyond. Thus, while one can not see beyond immediate foothills (east), heirarchial build up creates sense of mtns.

Cordova

ABIQUIU

Abiquiu,first settled in 1747, was constructed over ruins of an old Tewa Pueblo -- abandoned sometime around 1500.[1] In the vicinity of Abiquiu can be found at least ten prehistoric Pueblo sites. This parallels archaeological evidence that Indians migrated down the Chama River from Mesa Verde to the Rio Grande valley.[2] Abiquiu itself started as a settlement for Christianized (Hispanicized) Indians called "Genizaros." It was common colonial practice to locate such Genizaro Pueblos on the fringe of populated areas, thus buffering Spanish villages from hostile frontier tribes. In 1754, Spanish Governor Thomas Velez Cachupin issued a formal landgrant to Abiquiu's "congregation of Genizaro Indians."[3] The settlement had remained relatively isolated until recent (1960's) paving of Highway 84.

Earliest physical accounts of Abiquiu come from Fray Francisco Dominguez in 1776. These accounts make reference to "a large square plaza with a single entrance to the north between the convent church and the corner of the tenement."

---

1. Pearce, T.M., New Mexico Place Names -- A Geographical Dictionary, Albuquerque, University of New Mexico Press, 1965, p. 1.
2. Ortiz, Alfonso, New Perspectives on the Pueblos, Albuquerque, University of New Mexico Press, 1972.
3. Cordova, Gilberto Benito, Albiquiu and Don Cacahuate: A Folk History of a New Mexican Village, Los Cerrillos, New Mexico, San Marcus Press, 1973, p. 18.

Here Dominguez's description parallels the general form of present day Abiquiu. He goes on to note that "the approach to the Pueblo is a rather steep slope on the north side of the hill on which it stands." This particular reference to Abiquiu's unique sighting parallels identification of influential land features in the following landscape/builtscape matrix. Landscape variables 2, 3 and 4 describe definition of the natural space in which Abiquiu sits -- particularly variable 3, which refers to the same steep slope that impressed Dominguez in 1776. These variables are identified as being connected (conceptually and structurally) to a relatively large number of builtscape features. Similarly identified are landscape variables 12, 13, 19 which refer to functional limitations (constraints) of Abiquiu's unique sighting and variable 18 which refers to visual reference points within this setting.

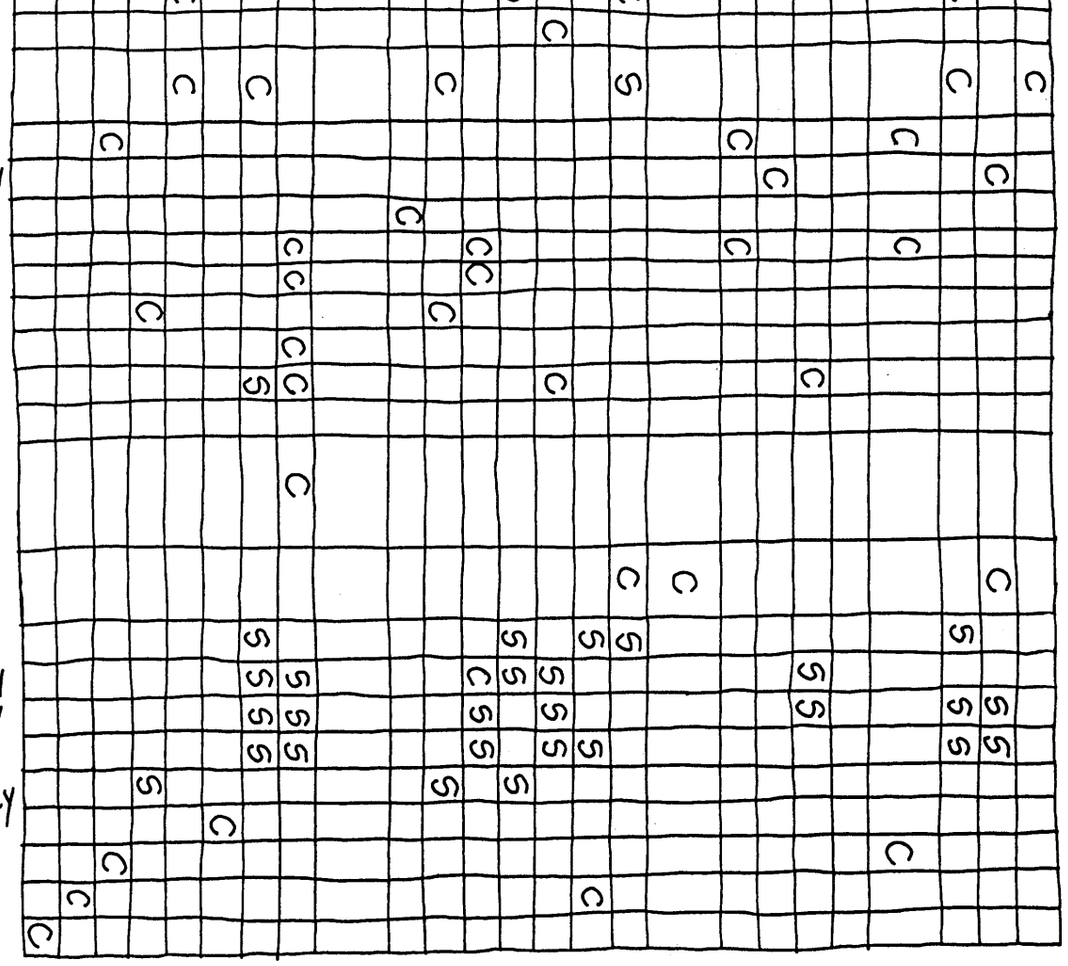
In response to this set of very influential landscape features, the matrix identifies builtscape variables 2, 6, 10, 4, 18-21 and 22 as having the densest network of landscape connections. Variables 2, 6, and 4 describe definition of the plaza's north/northeast edge. Here we see space bounded naturally by a precipice edge, being bounded structurally by a long low wall. This same precipice/wall parallel is seen at Taos Pueblo and Truchas. Also, use of a long, low wall to

maintain edge continuity,yet not block a visual sense of spatial release,is seen at both Taos and San Ildefenso pueblos. Builtscape variable 10 refers to church alignment. This alignment is parallel to mountain reference points, a circumstance seen in almost all the 15 test sites. However, Abiquiu's church is of particular importance in that it replicates landscape variable 4 -- namely penetration of the natural space by a massive landform. Sitting just in front of this landform (mesa), the church continues its thrust -- carrying it into Abiquiu's plaza proper. This is accomplished by extending beyond the building line observed by flanking structures,(constituting a blank mass which visually dominates the plaza space)and continuing to its center with a series of axial monuments and portals. That is, the church does not remain behind its wall as at Trampas but extends beyond it on an axis. In this way the plaza's spatial envelope is penetrated with a force equal to and parallel with penetration of the natural space. Further, just as the mesa extends in from the north, so the church extends in from the north -- duplicating not only impact but relationship. Finallly, landscape variables 18-21 and 22 describe built adaptation to Abiquiu's spatially constrained site. The densest set of landscape connections relate to these variables , and they are structural connections. This parallels analysis of

Hispanic relationship to land previously discussed in the Reference Framework.

1. enclosed space
*2. defined NW/S/SE by U of landforms
*3. defined N & NE by precipice edge
*4. sheer face mesa penetrates spatial envelope of space to N
5. E/SE landform continuous mesa face (sheer face)
6. S/SW definition - series of mountain foothills
7. W/NW edge contiguous line of merging sandhills
8. dominant landform to N
9. views to N/W/S/SE blocked by defining landforms
10. vista view to NE
11. indentation edge to E & SW
*12. hill penetrates first ring space to S
*13. arable land in valley to N
14. Jemez mtns. to S - Polvadera peak to S
15. enter space by winding up road to precipice
16. open flat space
17. enter space from SW by descending from hill
*18. ascending landforms to S imply sense of mtns. to S
*19. precipice & mesa are inflexible edges
20. channeled, directed view to NW
21. spatial release to NE
22. space visually concealed on precipice site
23. massive, sheer face mesa to N
24. gap in edge to SW
25. two hills enframe SW gap and Polvadera peak

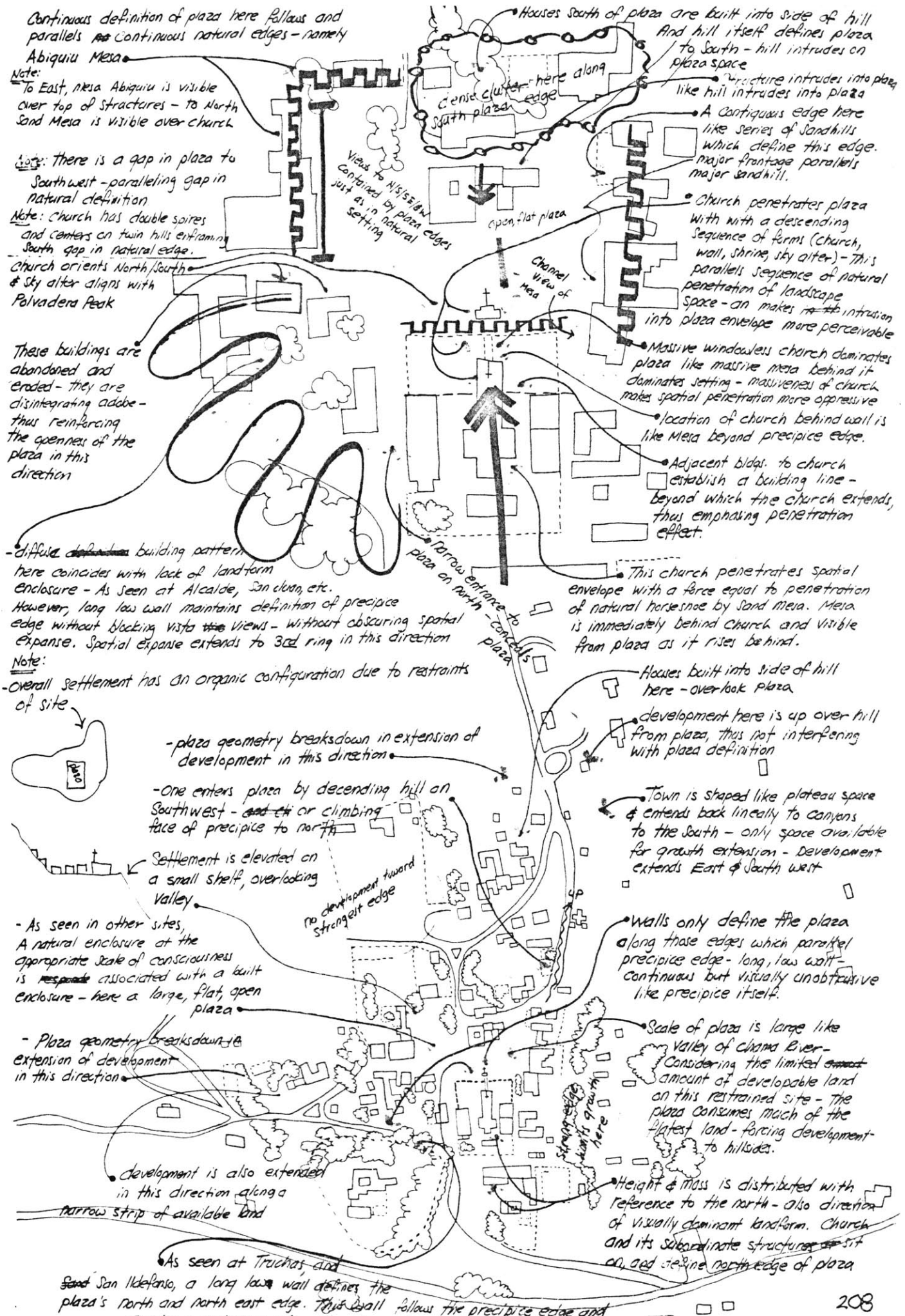
• landscape •



Abiquiu

• builtscape •

1. enclosed central plaza space
*2. church penetrates spatial envelope of plaza from N
3. continuous definition of plaza to E & SE
*4. diffuse development to N'E
5. house penetrates plaza space to S
*6. long, low, uniform continuous wall defines plaza to N & NE
7. distribution of mass & height to N
8. contiguous definition of plaza to W
9. large, flat, empty plaza space
*10. church has N/S orientation
11. sky altar faces S
12. narrow entrance into plaza on NE
13. descend into plaza from SW
14. dense cluster defines plaza to S
15. vista view to NE
16. church penetrates plaza with a descending sequence of forms, sky altar, wall, shrine
17. views to N, S, SE, W, contained by plaza definition
*18. extension of development to E & SW
*19. houses S of plaza built into side of hill
*20. breakdown of plaza geometry to NE & SW
*21. organic configuration of settlement
22. settlement on elevated site overlooking valley
23. channeled view in NW corner of plaza
24. massive windowless church
25. gap in plaza to SW
26. double steeple church - center sky altar


Continuous definition of plaza here follows and parallels ~~the~~ continuous natural edges - namely Abiquiu Mesa
Note: To East, Mesa Abiquiu is visible over top of structures - to North Sand Mesa is visible over church
Note: There is a gap in plaza to Southwest - paralleling gap in natural definition
Note: Church has double spires and centers on twin hills enframing South gap in natural edge.
Church orients North/South & Sky alter aligns with Polvadera Peak
These buildings are abandoned and eroded - they are disintegrating adobe - thus reinforcing the openness of the plaza in this direction
- diffuse ~~definition~~ building pattern here coincides with lack of landform enclosure - As seen at Alcalde, San Juan, etc. However, long low wall maintains definition of precipice edge without blocking vista ~~this~~ views - without obscuring spatial expanse. Spatial expanse extends to 3rd ring in this direction
Note:
- Overall Settlement has an organic configuration due to restraints of site
Ojo
- plaza geometry breaks down in extension of development in this direction
- One enters plaza by decending hill on Southwest - ~~and etc~~ or climbing face of precipice to north
Settlement is elevated on a small shelf, overlooking Valley
- As seen in other sites, A natural enclosure at the appropriate scale of consciousness is ~~responde~~ associated with a built enclosure - here a large, flat, open plaza
- Plaza geometry breaks down in extension of development in this direction
Development is also extended in this direction along a narrow strip of available land
As seen at Truchas and ~~Sand~~ San Ildefonso, a long low wall defines the plaza's north and north east edge. This wall follows the precipice edge and creates a continuous edge like the precipice itself. Also, like the precipice, it does not block views - as a long low wall, one can see over it. Thus, the wall is a continuous
Houses South of plaza are built into side of hill And hill itself defines plaza to South - hill intrudes on plaza space
Structure intrudes into plaza like hill intrudes into plaza
dense cluster here along South plaza edge
A contiguous edge here like series of sandhills which define this edge. major frontage parallels major sandhill.
Views to N/S/E/&W contained by plaza edges just as in natural setting
open, flat plaza
Church penetrates plaza with with a descending sequence of forms (church, wall, shrine, sky alter) - this parallels sequence of natural penetration of landscape space - an makes ~~its~~ its intrusion into plaza envelope more perceivable
Channel View of Mesa
Massive windowless church dominates plaza like massive mesa behind it dominates setting - massiveness of church makes spatial penetration more oppressive
location of church behind wall is like Mesa beyond precipice edge.
Adjacent bldgs. to church establish a building line - beyond which the church extends, thus emphasing penetration effect.
narrow entrance to plaza on north - conceals plaza
This church penetrates spatial envelope with a force equal to penetration of natural horseshoe by Sand Mesa. Mesa is immediately behind Church and visible from plaza as it rises behind.
Houses built into side of hill here - overlook plaza
development here is up over hill from plaza, thus not interfering with plaza definition
Town is shaped like plateau space & extends back lineally to canyons to the South - only space available for growth extension - development extends East & South west
no development toward strongest edge
UP
Walls only define the plaza along those edges which parallel precipice edge - long, low wall - continuous but visually unobtrusive like precipice itself.
Scale of plaza is large like Valley of Chama River - Considering the limited ~~amount~~ amount of developable land on this restrained site - the plaza consumes much of the flattest land - forcing development to hillsides.
strongest edge
growth here
Height & mass is distributed with reference to the north - also direction of visually dominant landform. Church and its subordinate structures ~~on~~ sit on, and define north edge of plaza

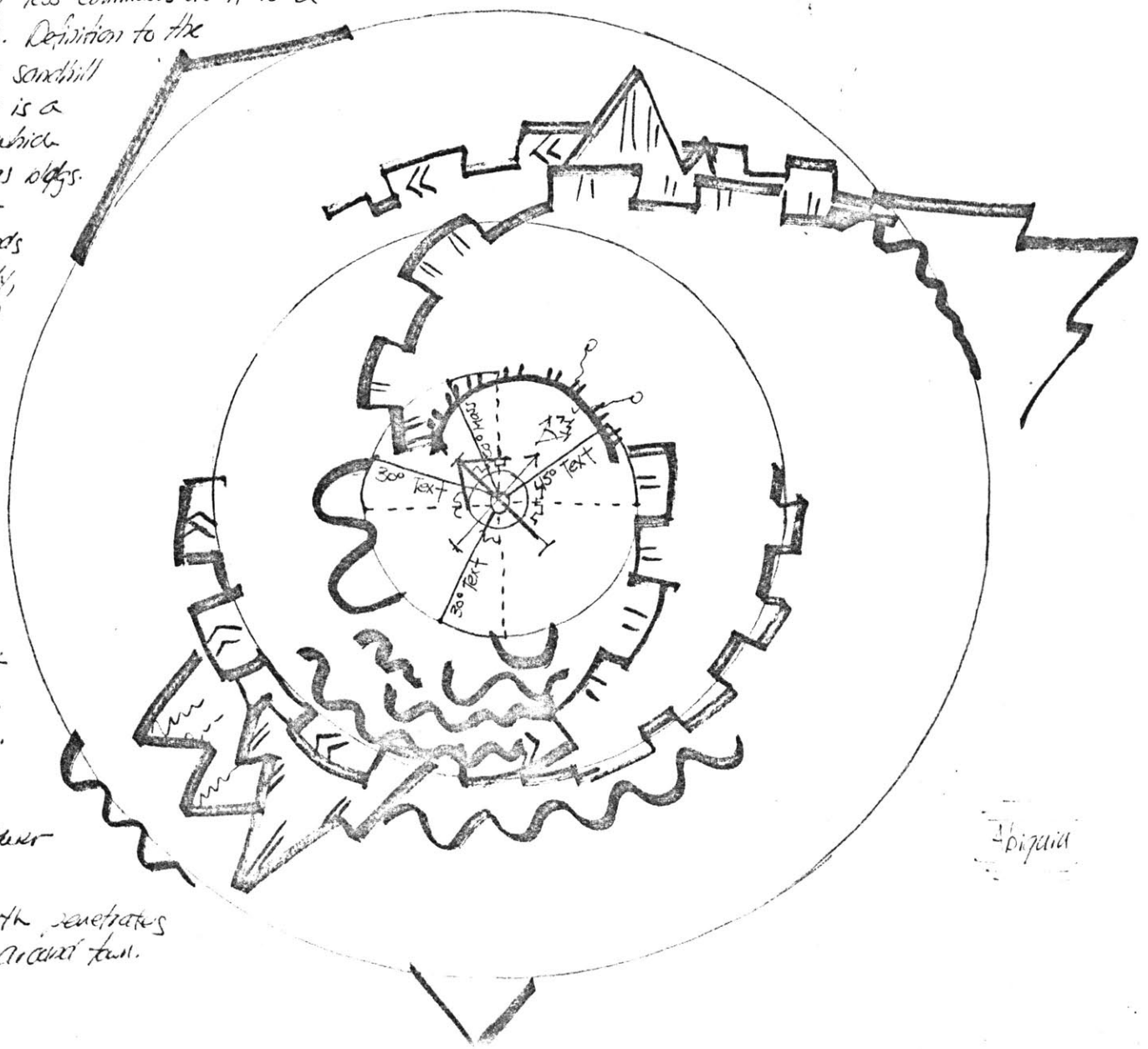
Abiquiu

Space is both enclosed & dominated.

This is an enclosed space bounded on 3 sides by rising land-forms and on the northeast by a precipice definition to the Southeast is strongest with a monolithic, sheer, straight-edged mesa bounding. To the Southwest & west definition is strong but less continuous as it is a series of sand & earthills. Definition to the Northwest is continuous sandhill at the first ring. There is a hill on the Southwest which sits in horse shoe and has ridges on it. To the Northeast is a mesa which bounds at the second ring briefly, and swings to the north thus penetrating the horse shoe ~~enclosure~~ enclosure about town. There are no views outside enclosure at first ring in 3 directions. To the Northeast & east views are more expansive opening to 2nd & 3rd ring. There is a gap to north.

Scale: the scale of the space is intimate, settlement almost fills the entire space. Average scale is 30' Texture. Although not above ground precipice to North provides boundary as it removes visual from surrounding landscape.

Mesa coming in from North penetrates horse shoe of landforms around town.



Spiral

LAS TRAMPAS

In 1751, 74 year-old Juan de Arguello founded the settlement of Las Trampas in a small valley of the Rio de las Trampas -- north of Truchas. A dozen families accompanied Sr. Arguello and population has not changed much since then with the present number of families being 34.[1] A 1935 Tewa Basin Study[2] places the average family size at 4.2 making an approximate population of 146 for Las Trampas. In its agricultural economic base, physical isolation,and prevailing preference for Catholicism; Las Trampas is typical of Hispanic mountain villages. This settlement remained isolated -- that is, inaccessible by improved roads -- until the 1960's when New Mexico's highway department constructed what is known as the "high road to Taos."[3] Alignment of the route threatened Los Trampas historic San Jose de Garcia Church (completed sometime before 1776, as Fray Franciso Dominguez makes mention of it in completed form in 1776). With the aid of influential preservationists from Santa Fe and Nambe, right-of-way alignment was shifted, thus preserving the church and town in a form which remains relatively unchanged from Dominguez' observations.

---

1. Bullock, Alice, Mountain Villages, Santa Fe, Sunstone Press, 1973, p. 7.
2. Weigle, Marta, ed., Hispanic Villages of Northern New Mexico, Santa Fe, Jene Lyon Publishers, 1975 (reprint of 1935 study), p. 208.
3. Bullock, Alice, Mountain Villages, Santa Fe, Sunstone Press, 1973.

The value of San Jose de Garcia Church as an architectural relic is affirmed by its status as a national register landmark, but its importance as a mediator between landscape and settlement is illustrated by Las Trampas' landscape/builtscape matrix. The church is not only visually dominant but also form-giving as its wall abuts the plaza, defining its entire south edge. Thus, the wall becomes an integral element in plaza articulation -- a relationship reinforced by geometric independence of wall and church alignment. Thus the wall, necessary in giving the plaza shape, seems to respond to different organizational determinants than San Jose Church (assuming deviations from symmetrical balance require rationalization). Analysis of this situation when seen at Rancho de Taos revealed that plaza related elements responded to immediate spatial conditions of their natural setting while the church made independent connections to more distant mountains and directional reference points. The same appears to be true of Las Trampas. Landscape variable 15 and 18 describe valley shape and are connected (conceptually and structurally) to a significant number of builtscape features. Also influential among landscape features are variables 7, 16, and 17 which describe reference points among immediate and distant natural forms. In response to this, builtscape variables 8, 22, and 23, which describe spatial configuration of the plaza,are identified as having a more

dense network of connections to landscape features. Also builtscape variables 10, 11, 13, and 18, which describe orientations and alignments are so identified. Particularly significant is variable 11 which relates to the geometric independence of church and plaza.

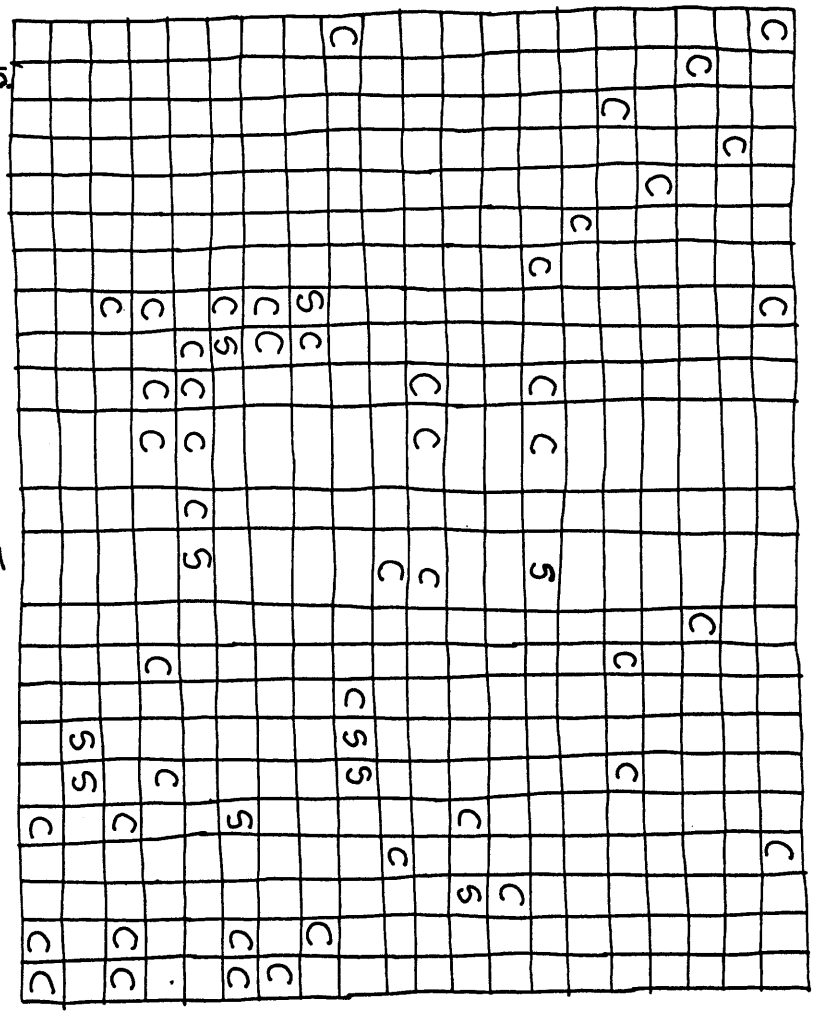
1. enclosed valley on N/S/E/W
2. small broken hills W edge - diffuse W edge
3. series of 3 merging hills define S edge
4. single hill flanked by gaps, forms E edge
5. continuous landform defines N edge
6. gap in natural edge to NE
*7. gap in natural edge to SE
8. streams from NE/SE gaps converge in valley
9. river drainage flow - E/W
10. view of Truchas peak through SE gap
11. views contained by defining landforms
12. flat, small, valley
13. N edge aligns southeasterly
14. S edge aligns E-lineal
*15. valley tapers to W
*16. Truchas' peak to SE
*17. dominant defining landforms to N
*18. E/W massing of landforms
19. arable land limited to valley
20. E/W alignment of valley

• landscape •

Las Trampas

• builtscape •

1. enclosed central plaza space
2. S plaza - contiguous edge of 3 uniform bldgs.
3. N plaza - continuous edge of church wall
4. W plaza - diffuse edge
5. E plaza edge defined by single building
6. gap in edge to NE
7. gap in edge to SE
*8. plaza space tapers to W
9. independent alignment of N & S edges
*10. orientation of church sky altar to SE
*11. church alignment independent of plaza edges
12. double steeple church form
*13. view of mtns. beyond valley from church entrance
14. single mound gate lentil
15. distribution of mass & height to N
16. flat small plaza space
17. growth independent of plaza alignment
*18. lineal growth along N valley wall
19. E/W alignment of plaza space
20. plaza space contains views
21. drainage converges in plaza
*22. N edge aligns southeasterly
*23. S edge aligns E



There is a gap in northeast corner of natural definition - made more visually prominent by road cut and entrance of creek. This natural gap parallels gap in northeast plaza, through which drainage & road enters.

This edge is a dense cluster of structures which unlike the west edge does not permit unobstructed views. & natural features bounding this edge are visible over top of structures.

The East edge is naturally bound by a hill with hills on the North & South coming around behind it. The East built edge consists of a house prominently located in plaza with bldgs. extending from South edge, wraping around behind. - This was seen @ Abiquiu.

drainage converges in plaza like two rivers converge in valley

The Church itself is turned askew of wall - an intensional misalignment of these inter-related elements. Also, church double steeple points toward Truchas Peak - a feature seen in Truchas church wall is parallel to natural definition. Church wall is askew in relation to South plaza edge - aligns southeastly.

The landform behind church is the most dominant of defining land features & Church is backed up against it - also Seen at Abiquiu.

A strong edge broken into three separate parts with uniform height & rigid bldg. line. This edge is naturally bounded by 3 hills which from east to west are small, medium & large in length, just like the bldgs. However, hills are also the same height & follow a straight line

drainage

Gap here parallels natural gap in East natural definition - most significant gap in landform edge - & natural gap permits a creek to enter Valley and allows only view outside Valley edge. Gap in Southeast plaza permits drainage to enter - parallels natural phenomenon

South

This edge is maintained by wall of the church - which is eye level & runs the entire length of plaza.

diffuse edge here corresponds with diffuse natural definition - built edge is visually penetrable but has sufficient cohesion to define west side of plaza

orientation of church to mountains is supported by excellent view of mtns peak through East gap - from church entrance.

Visually prominant hill to East has a creek entering from either side of it. Bldg in plaza aligns with hill & has space on either side - also water during storm as drainage flows from either side into plaza

Plaza shape parallels shape of natural space - Tapers to west - flat/open plaza

distribution of Mass to north - distribution of density to north

like north side, bldg line parallels natural line

wall of church follows wall of natural space

Plaza space is same shape as natural space

higher here

lower here

While hills to west are low, there is no view as land falls away into Rio Grande Valley beyond hills - Thus dry view is empty

The church gate is aligned with a hill to South & shape of lentil over gate is a single mound, while Church has two steeples and sits in relation to gate like Truchas Peak to hill.

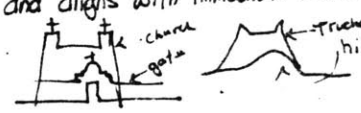
west bldgs, like East & South bldg, almost exactly follow natural hill line

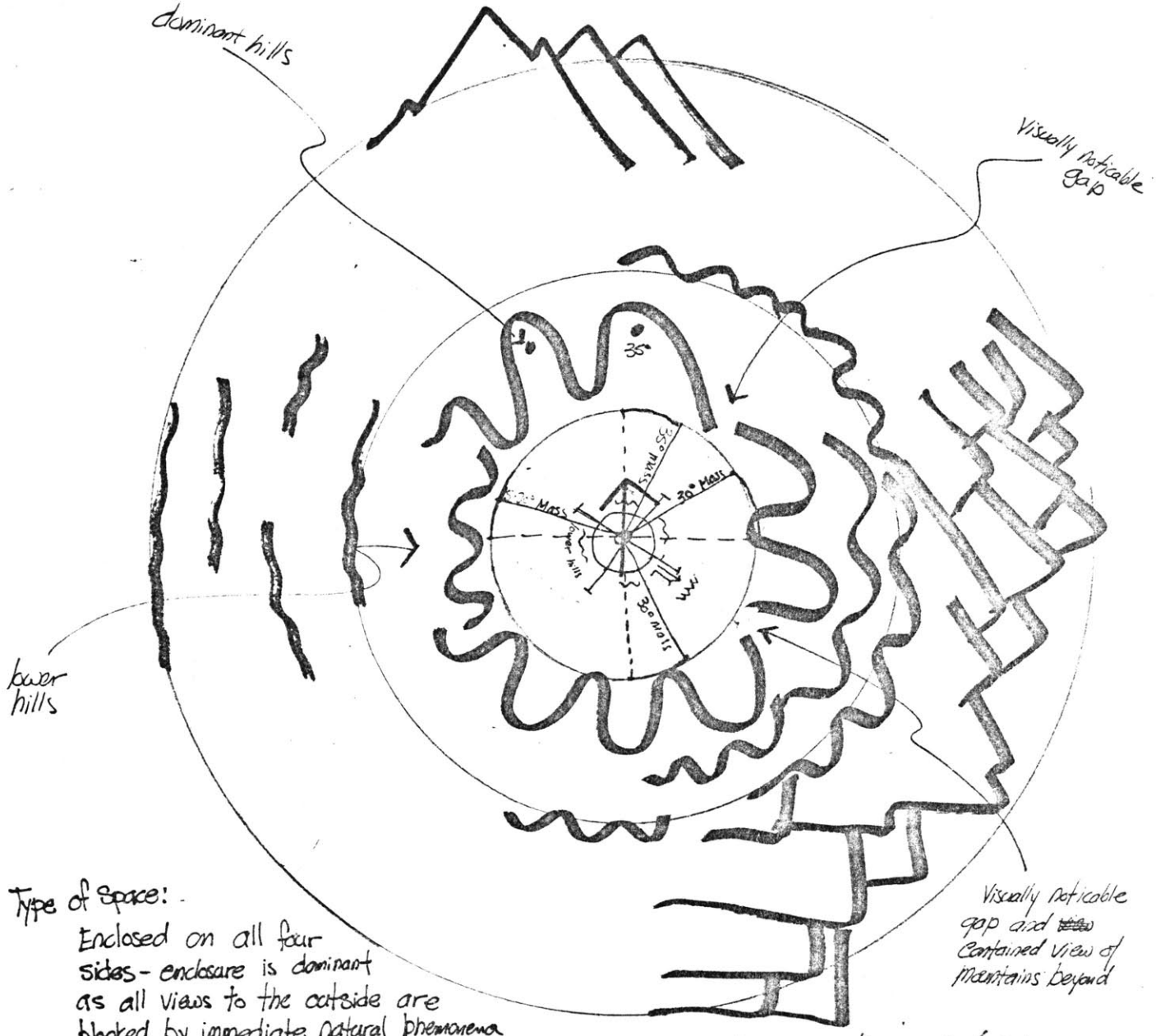
Growth clings to extreme edge of natural space, independent of plaza influence

* plaza elongated East/west - Town configuration lineated East/west. Growth to north is lineal East/west. Natural space is elongated East/west -- river flows East/west.

Las Trampas

Association of gate with hill is reinforced by the fact that church wall defys church orientation and aligns with immediate natural edge.





Type of Space:
Enclosed on all four sides - enclosure is dominant as all views to the outside are blocked by immediate natural phenomena
Enclosing elements to west are low and in comparison to those on other side (which are high above eye level), the western definition appears almost as a gap - it is at least a weaker definition. There is a contained view to the Southeast of mtns beyond enclosure. Enclosure is dominated by larger hills to north. View to west is empty as land beyond hills falls away

Scale: the scale of this space is small due to physical & visual presence of enclosing elements - it is almost a plaza scale.

Trampas

VELARDE

About 12 miles north of Alcalde is another Hispanic village which sits at the foot of Black Mesa -- Velarde. Velarde is larger than Alcalde with approximately 600 people.[1] Also it's older, having been founded by Matios Velarde in the decade prior to 1855 [2] who originally named it La Jolla. Typical of Hispanic villages, the major economic base is agriculture -- specifically fruit orchards, an enterprise enhanced by surrounding landforms which furnish adequate frost protection. Where Black Mesa reigns without landform competition at Alcalde, here it simply forms the west side of a deep, gorge-like valley. On either side of Velarde (east/west), monolithic sheer-faced landmasses rise almost 1,000 feet, visually dominating the narrow valley between and coming together north of the settlement to form a deep gorge. South of Velarde, Black Mesa stands alone,providing a single organizing principal in an empty expanse. At Velarde, Black Mesa's visual dominance is challenged by an equally powerful landform parallel to it. Together they overpower the space encasing it in a uniformity which gives no organizational cues. Where Alcalde is drawn together

---

1. Weigle, Martha, Hispanic Villages of Northern New Mexico, Santa Fe Jene Lyons Publishers, 1975 (reprint of 1935 study), p. 178.

2. Bullock, Alice, Mountain Villages, Santa Fe, Sunstone Press, 1973.

in a lineal mass at the foot of Black Mesa, Velarde spreads out in nucleated clusters, distributed equally along the east and west edges of its narrow valley. Parallel landmasses give the valley its lineal shape. Velarde generally responds to such an elongated space with a lineal distribution of nucleated clusters. But, the mesas, while visually overwhelming the valley, compete for organizational influence;and by blocking any visual connection to an outside world, they preclude any other landscape reference. In such a situation, the only remaining organizational principle would be a structural one -- a structural response to irrigation and spatial constraints of this narrow valley. Verlarde's landscape/builtscape matrix reinforces this observation by the significant number of structural connections identified within it. Thus, two types of landscape features are identified as influential on the form of Velarde -- those which describe competing impacts of bounding mesas (landscape variables 1, 2, 12, 11, 16) and those which describe functional constraints of the valley space (landscape variables 4, 10, 14).

Parallel to these dimensions of landscape influence, two types of built features are identified as having the densest network of landscape connections -- those which describe functional adaptations to site constraints (builtscape variables

1, 2, 11) and those which describe a lack of organizational response to either of the competing mesas (builtscape variables 4, 6, 10, 12). Most significant among these is variable 12 (inward orientation) which in many ways suggests a negation of external reference and conscious embrace of internal space.

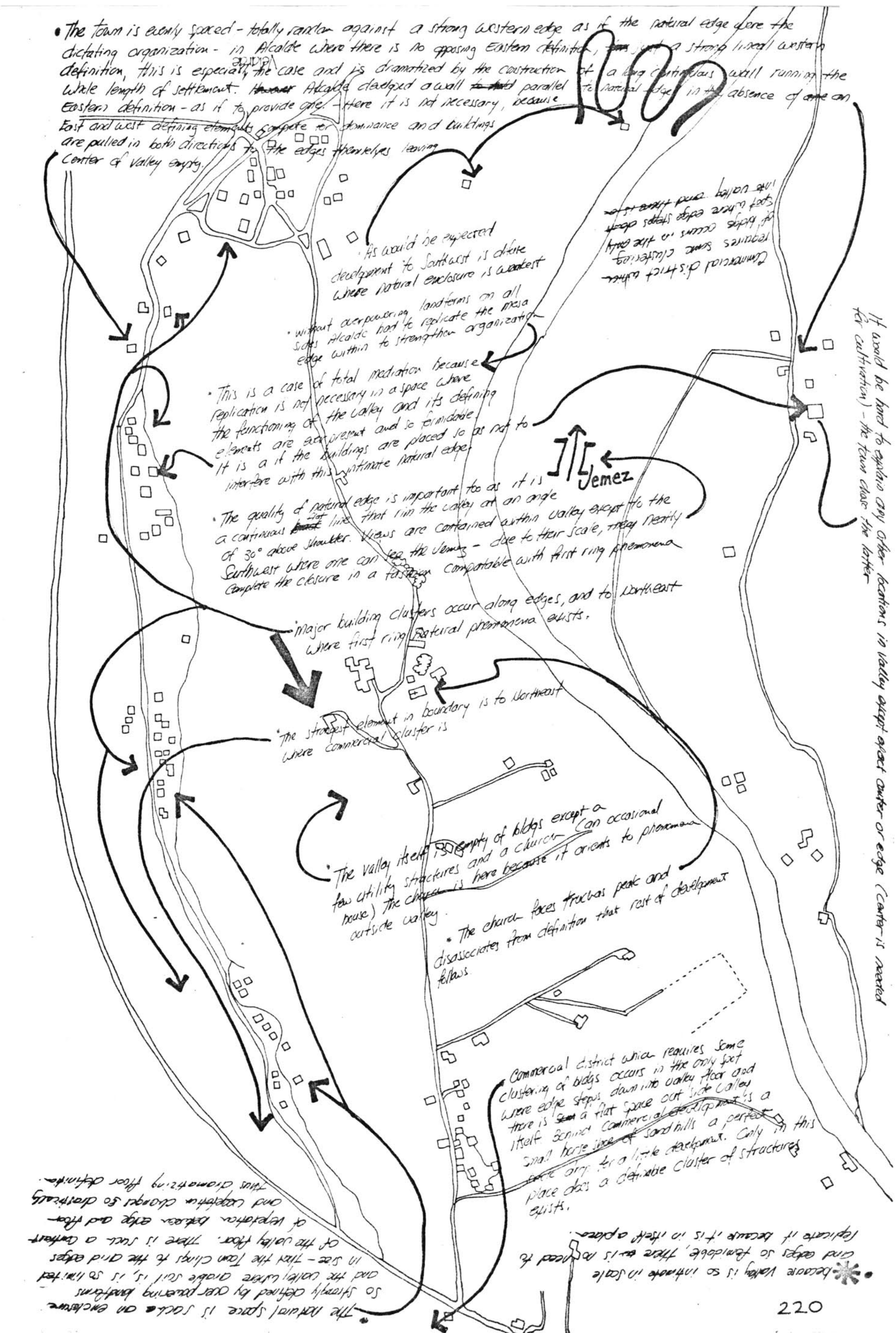
Velarde

• landscape •

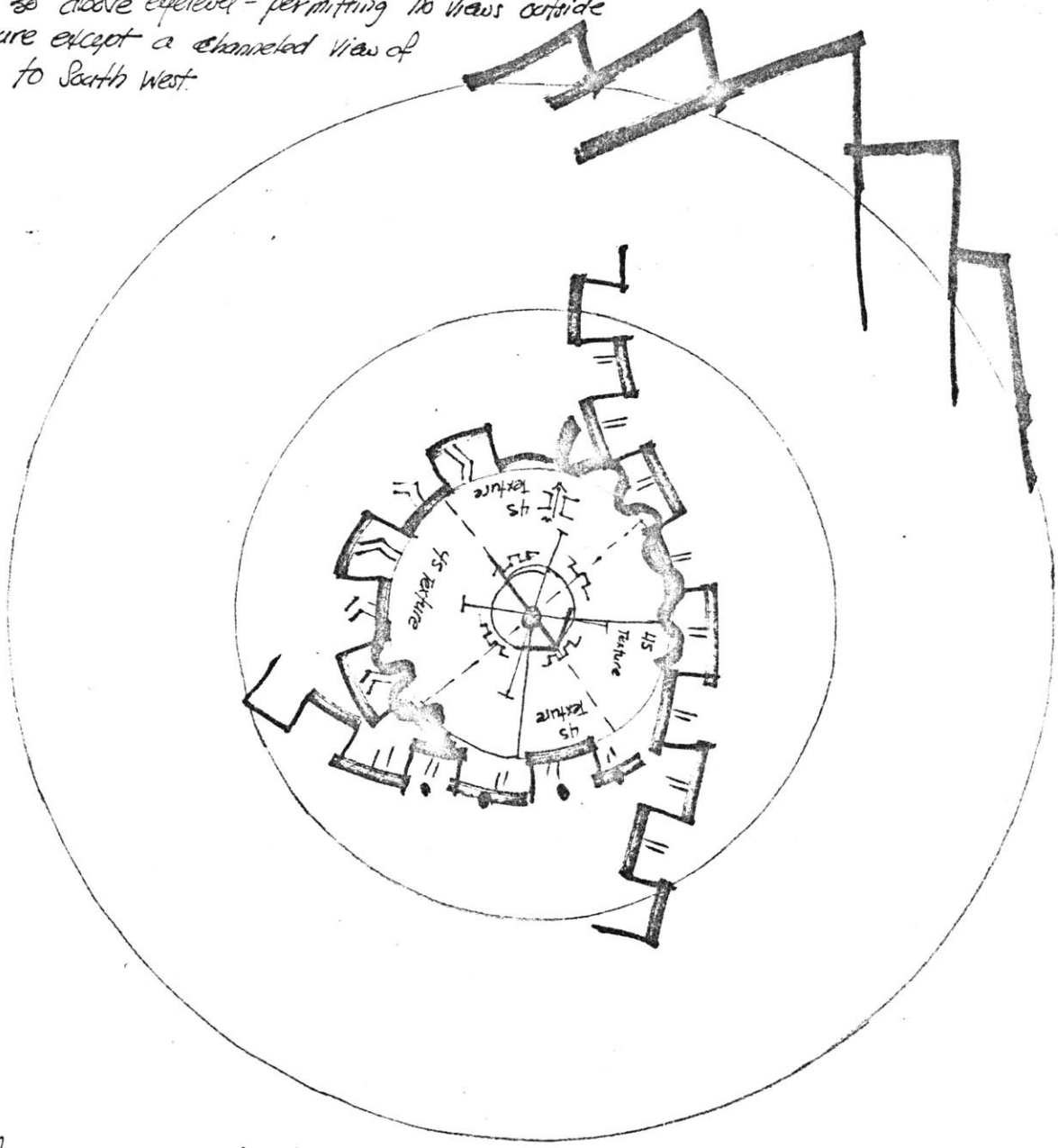
*1. directed space defined by parallel mesa forms
*2. mesas visually dominate space
3. mesas are steep, sheerface, monolithic
*4. arable land limited to valley
5. mesas form gorge to NE
6. mesas widen to SW - space opens
7. space aligns NE/SW
8. river flows NE/SW
9. alcove indentation in edge to NE
*10. NE/SW pattern of irrigation
*11. mesas visually compete for dominance
*12. views contained by mesas
13. Channeled views of Jemez to SW
*14. small linear canyon-like space
15. NE/SW landmassing
*16. undifferentiated horizontality to bounds
17. space narrows to NE
18. Truchas peak to SE

• builtscape •

*1. nucleated clusters about extreme edge of narrow valley
*2. clusters have independent align
3. development SW random & diffuse
*4. no view direction
5. settlement located in narrow valley bottom
*6. lack of definable center & contiguous subdistricts
7. largest clustering to NE
8. church aligns SE
9. church in valley center independent of settlement
*10. uniform distrib. mass & density
*11. NE/SW distribution of clusters
*12. inward orientation of settlement


• The town is evenly spaced - totally random against a strong western edge as if the natural edge were the dictating organization - in Alcalde where there is no opposing Eastern definition, just a strong lineal western definition, this is especially the case and is dramatized by the construction of a long continuous wall running the whole length of settlement. Alcalde developed a wall parallel to natural edge in the absence of one on Eastern definition - as if to provide one. - Here it is not necessary, because East and west defining elements compete for dominance and buildings are pulled in both directions to the edges themselves leaving Center of valley empty.
As would be expected development to Southwest is where natural enclosure is weakest
Commercial district which requires some clustering of bldgs occurs in the only spot where edge steps down into valley
• without overpowering landforms on all sides Alcalde had to replicate the mesa edge within to strengthen organization
• This is a case of total mediation because replication is not necessary in a space where the functioning of the valley and its defining elements are ever present and so formidable. It is as if the buildings are placed so as not to interfere with this intimate natural edge.
Jemez
• The quality of natural edge is important too as it is a continuous flat line that rim the valley at an angle of 30° above shoulder. Views are contained within valley except to the Southwest where one can see the Jemez - due to their scale, they nearly complete the closure in a fashion compatable with first ring phenomena
It would be hard to explain any other locations in valley except center or edge (center is needed for cultivation) - the town chose the latter
Major building clusters occur along edges, and to Northeast where first ring natural phenomena exists.
The strongest element in boundary is to Northeast where commercial cluster is
The valley itself is empty of bldgs except a few utility structures and a church (an occasional house) The church is here because it orients to phenomena outside valley
• The church faces Truchas peak and disassociates from definition that rest of development follows.
Commercial district which requires some clustering of bldgs occurs in the only spot where edge steps down into valley floor and there is a flat space out side valley itself. Behind commercial development is a small horse shoe of sand hills a perfect spot for a little development. Only in this place does a definable cluster of structures exists.
* The natural space is such an enclosure so strongly defined by overpowering landforms and the valley where arable soil is, is so limited in size - that the town clings to the arid edges of the valley floor. There is such a contrast of vegetation between edge and floor and vegetation changes so drastically thus dramatizing floor definition.
• because valley is so intimate in scale and edges so formidable, there is no need to replicate it because it is in itself a place.

Type of Space: Enclosed space bounded on 3½ sides by overpowering landforms. These landforms make a straight line unbroken edge which dominates the enclosure. Most dominant landform is to the Northeast - a mesa of volcanic rock. Major gap in enclosure occurs in Southwest corner and serves as an exit for the Rio Grande. There is also a gap to the North but it is small & narrow and hardly noticable as a break in edge continuity & unless one is right next to it. The faces of surrounding forms are sheer and monolithic and edge line occurs about 4s/30° above eyelevel - permitting no views outside enclosure except a channeled view of denver to South West



Scale of space- bounding landforms are so overbearing that the scale of the space is intimate - a 45° texture definition

VELARDE

CHAPTER IV

THE CROSS-CULTURAL TEST

The landscape/builtscape matrix associated with each of the test sites presented in Chapter III represents a distillation of open-ended field data into its component features (settlement and natural setting features) and their structural or conceptual inter-relation. Thus the site surveys and their respective landscape/builtscape matrices are the first two steps in a process of refinement which will ultimately yield a vocabulary of landscape linkages. Two other steps are presented in this chapter. They are:

1. Summarization of builtscape variables as explained by their respective structural/conceptual connection to natural features, into a preliminary list of the architectural/organizational devices employed in establishing a relationship between various settlements and their settings.
2. Translation of this list into a vocabulary of landscape linkages via cross-cultural repetition.

In essence, activity 1 (above) is a specific statement of our hypothesis. That is, the devices identified in activity 1 represent the way 15 test sites organize about a common structural theme of landscape relationship. (the use of a landscape relation rationale to explain 15 different settlements) As identified earlier, in our construction of a methodological framework, this structural theme must be subjected to three

tests:

1. Cross-cultural continuity test
2. Temporal continuity test
3. Differentiation test.

The major concern of this chapter is to undertake test "1" -- the cross-cultural test.

The fifteen test sites of Chapter III were selected on the basis of cultural distinction,and as a result each is clearly associated with Indian or Hispanic identity. Thus the best test of cultural continuity is for one to consider each of the architectural/organizational devices in a systematic framework of cultural comparison. Those which are common to both Indian and Hispanic groups can be considered culturally independent and thereby serve to explain the fifteen different settlements in terms which place it in a larger physical reality -- the mid Rio-Grande valley. As presented in the introduction to this thesis, we are endeavoring to explain differences in terms which also express continuity over space and time. Thus by eliminating those devices which are culturally determined, we are left with those which remain subject to the influences of natural setting . To comprehend a settlement in such terms is to comprehend its unique association with the

landscape of our study area. A test for continuity over time is carried out in Chapter V. Chapter IV is concerned with continuity over space -- cross-cultural continuity.

Even a casual glance at the builtscape variables of Chapter III reveals that while each accurately explains some feature of a particular settlement, they collectively would constitute an unwieldly and redundant list for cross-cultural comparison. Further, while two variables might make reference to different built phenomena, evaluation of their conceptual/structural landscape connections reveals that they are used in an identical manner. For example, the shallow set back of upper stories in Taos Pueblo's five-story houseblock is explained by the matrix as a conceptual response to the mountain's sheer facing -- likewise a sheer faced monolithic wall at Alcalde is explained by the matrix as a conceptual response to the sheer face of Black Mesa. Thus the wall at Alcalde and treatment of houseblocks at Taos Pueblo are actually the same type of landscape linkage even though they are different built phenomena. We consequently combine them under a larger heading entitled "compositional facing."

The 340 builtscape variables presented in Chapter III constitute a list too overwhelming and redundant for use in the cross-cultural test. Therefore, a more mutually exclusive list of 63 variables has been devised -- a list based upon individual consideration of each of the previous 340 variables -- and a

list into which each of the 340 variables can fit. This list which expresses all the architectural/organizational devices employed in landscape relationship, as identified in Chapter III, is the basis of the cross-cultural continuity test. That is, those variables which are repeated in both cultures will be deemed culturally independent. Those not shared by Indian and Hispanic groups are explained by cultural distinctions as identified in the reference framework of Chapter II. Finally, those variables which are deemed culturally independent constitute the basis of our "landscape linkage vocabulary" Thereby, the vocabulary comprises a more specific explanation of landscape relationship as a structural theme. Each of the 63 summary variables is listed below with an accompanying definition. The 63 variables are organized in 12 categories identifying 12 dimensions of the built environment. Exactly which of the 340 variables of Chapter III is associated with each of the following 63 summary variables is illustrated in the cross-cultural matrix. Thus, one can go back into Chapter III and review specific manifestations of landscape linkages.

Internal Structure

1. Breakdown of geometric rhythm -- disintegration of a definable geometric relationship of parts such as an imaginary building line or grid pattern. Usually a structural consequence of a conceptual pattern giving way to inflexible site constraints.

2. Physical internalization of drainage -- the use of natural drainage patterns as an organizational guide for the settlement or as a structural component of the settlement -- often used conceptually as means of replicating the landscape setting or structurally as an adaptation to a site constraint.

3. Physical internalization of landform -- integration of land reliefs within the built fabric of a settlement -- used in the same manner as drainage.

4. Concentric placement -- the placement of one object or pattern within another, used as a conceptual device to replicate landscape, maintain a central pattern, or reinforce the alignment of a particular element.

5. Independent orientations -- separate directional alignments of two or more objects which would normally bear a common geometric relationship.

6. Inward orientation -- introversion of a settlement -- structures face in instead of out.

7. Selective placement of mass/height/density/use -- A preferential location of mass/height/density/or particular ritual use within the settlement -- usually this placement corresponds to location of dominant landforms.

8. Reinforcement of enclosure -- the duplication of a boundary usually in response to a multiple natural enclosure or to strengthen contrast between one edge and another.

9. Physical surrender to views -- the subordination of built patterns to view corridors.

10. Central focus -- built definition of a central space (plaza) which usually parallels in its shape and egresses, characteristics of the natural space in which it sits.

11. Compositional juxtaposition-- the conscious placement of built features to create a vignette of some natural phenomena -- a reduction of some circumstance in the natural setting.

Spatial Vents

12. Openness -- a sense of expanding space rendered by the selective absence or opening of an enclosing element -- such as an open-ended plaza -- typically used in response to natural spatial release.

13. Gaps -- a narrow, channeled break in built definitions -- often used to parallel prominent gaps in the natural definition.

14. Breaks -- large scale edge penetrations which interrupt the continuity of built enclosure -- usually parallels such penetrations of the natural enclosure (often associated with a river break).

15. Enframed gaps -- the conscious articulation of an opening in the built edge -- usually to orchestrate a view or to replicate a natural circumstance by maintaining edge continuity across a gap.

16. Random pattern (diffuse development) -- a sense of expanding space rendered by weakening of a development pattern -- typically used as a conceptual response to natural spatial release or breakdown of natural enclosure.

17. Condensing pattern -- the tightening of a spatial pattern or focusing of a settlement axis -- typically a conceptual response to tightening natural enclosure or increasing proximity to landmark natural feature.

Edge Articulation

18. Continuous edge -- an edge that visually reads as being composed of uninterrupted construction -- typically a conceptual parallel to continuous natural edges.

19. Contiguous edge -- an edge that visually reads as being composed of adjacent built elements which, while not physically connected, are strong enough in their association to tightly bound a space -- typically a conceptual response to contiguous natural edges.

20. Diffuse edge -- an edge which reads as loosely constructed of separate and random structures -- typically a conceptual response to weak natural definition.

21. Compositional facing -- the conscious modeling of structural surfaces or form variations to bear some resemblance to natural surface reliefs.

Edge Quality

22. Monolithic -- unbroken -- an edge which visually reads as showing or allowing no variation -- typically a conceptual response to monolithic natural edges or a devise used to negate visual connections beyond structural limits thus reinforcing visual orientation in another direction.

23. Labyrinth penetrations -- cuts in a built edge which visually read as a networking of narrow corridors often used as a conceptual response to labyrinthine erosions of natural edges.

24. Uniform edge -- the equal visual importance of defining edges -- typically used as a conceptual response to non-hierarchial natural definition.

25. Reticulated edge -- an edge which is visually complicated by structural projections or indentations often used as a conceptual parallel to extensive erosion of natural edges.

26. Soft edge -- an edge which does not follow a strict building line but undulates -- typically a structural response to site constraints or movements within the plaza.

27. Hard edge -- an edge which strictly follows an unyielding building line typically an indication of the conceptualization of an entire edge or set of structures in a single landscape replication.

28. Transparent edge -- an edge which exists below eye level to preserve or enframe visual connections.

29. Visual containment -- the blocking or obscuring of visual connections beyond built edges -- typically a conceptual response to visual containment by natural features.

Sensory Connections

30. Vista view -- a panorama -- wide angle view.

31. Focused view -- a channeled view -- view orchestrated to a particular natural feature.

32. Audial connection -- natural sounds as part of the sensory experience within a settlement -- typically a structural response to drainage or irrigation channels.

Defined Space

33. Elongated space -- space extended with reference to an axis -- typically a conceptual reponse to elongated natural space -- sometimes a structural response to constrained natural space.

34. Concealment of space -- camouflaging of internal space by built fabric -- conscious negation of external evidence of internal space -- typically used as a conceptual response

to concealment of a natural space.

35. Penetration of spatial envelope -- an intrusion into a defined space -- the instrusive presence of a physical element which interrupts a pattern of spatial definition or spatial quality -- typically used as a replication of intrusions into the natural space.

36. Tapered space -- a space which gradually widens or narrows-- typically a replication of natural enclosure but also a structural response to site constraints.

37. "U" shaped spaced -- space which is only defined on three sides -- typically a conceptual parallel to three-sided natural enclosure.

38. Bounded space -- space which is enclosed on four sides -- typically a conceptual parallel to bounded natural spaces.

39. Dominated space -- a space whose scale is visually altered by the overpowering presence of a built element -- a built element which has commanding influence over space -- dominant elements can define their own space as all other elements are perceived in reference to it -- typically used as a replication of dominant landforms and their impact on a spatial setting.

40. Constricted space -- physically defined space which is suddenly compressed, narrowed, squeezed, forcibly confined--

typically used as a replication of natural spatial characteristics.

Alignments/Orientations

41. Expression of direction -- a directional preference made visible by a physical gesture of building form, orientation or development pattern -- typically a conceptual response to land features of influence on the settlement form.

42. Extension of direction -- a reinforcement of directional preference by the resultant formation of physical growth or additional development -- used both as a conceptual response to land features of influence and a structural response to site constraints.

43. Expression of axis -- the alignment of a dominant structure, imposing elements or development pattern about an imaginary center line -- typically a conceptual response to some bipolar configuration of landmassing or to an axial element within a natural space, such as a river, stream, etc.

44. Reinforcement of axis -- strengthening of an imaginary centerline by the parallel conformance of other built features -- typically used as a conceptual response to bipolar configuration of landmassing or axial elements in natural space -- also a structural response to irrigation patterns.

45. Directed visual orientation -- the physical manipulations of view preference via a hierarchy of visual experiences which culminate at a particular object or direction -- typically used as a conceptual response to visual direction in the natural setting -- that is to replicate or reinforce this direction -- also as a device to negate visual competition in the natural setting thus making a statement of conscious orientation.

46. Cardinal direction -- orientation about the four points of the compass -- typically used as a conceptual statement of center.

Ground Surface of Defined Space

47. Landscaped -- the conscious planting of vegetation -- typically used to complete a compositional juxtaposition (number 11) or provide a microclimatic condition.

48. Flat -- a surface that is smooth without projection or depression -- used as a replication of natural surfaces of this quality.

49. Empty -- a space which visually reads as unoccupied by structure or activity -- a passive space -- typically used as a replication of natural spaces which because of their scale read as voids.

50. Dish shaped -- a space whose surface is sculptured --

dished out -- the one documented example of this was the floor of a dance plaza worn low in the center by centuries of ceremonial dancing.

51. Sloping -- the surface is inclined -- typically used as a replication of valley floors which are noticeably sloped toward the center -- also as a structural response to site constraints.

Size of Defined Space

52. Large -- a plaza or other defined space which is perceivably bigger than its volume of use would require -- typically a replication of natural scale.

53. Expansive -- a plaza or other defined space visually characterized by a dramatic sense of openness -- much larger than volume of use would require -- dramatizes a sense of emptiness -- typically a conceptual response to natural scale.

54. Small -- a plaza or other defined space which is perceivably undersized for its purpose -- a space which dramatizes one's sense of enclosure -- conveys a sense of confinement -- typically a structural response to site constraints -- adaptation to a small scale natural space -- thus the limited usefulness of built space.

Built Shapes

55. Compositional massing -- the conscious manipulation of structural mass to create a model of some natural phenomena -- a landform or natural phenomenon articulated in architecture (three-dimensional).

56. Structural profile -- manipulation of structural silhouette by the conscious arrangement of structural or mass projections (two-dimensional) -- typically used as a replication of landmass profile.

57. Accessory profile -- conscious shaping of walls, gates and other structural accessories to create a desired silhouette -- typically used as a replication of landform or natural phenomenon.

Entrances

58. Ascending entrance -- arrival prefaced by an incline -- typically a structural response to site constraints -- that is a settlement built on a hill.

59. Descending entrance -- arrival prefaced by a decline -- typically a conceptual response to siting in valley spaces or other landscape depressions.

60. Channeled entrance -- arrival via a narrow corridor faced by continuous built frontage -- typically a replication of natural channels which provided entry to a site such as canyons or gorges or a replication of river/stream channels.

Siting

61. On walls of natural space -- siting of settlement development on face of landforms which define natural space -- typically a structural response to irrigation and limited arable land in narrow mountain valleys.

62. Extreme edge of natural space -- siting of settlement development on periphery (extreme perimeter) of natural space -- typically a structural response to irrigation needs and limited arable land in narrow valleys.

63. Symmetrical to defining land features -- siting of settlement development with balanced geometric relationship to key features in natural definition -- typically a conceptual response intended to define center or reinforce one's place in a cosmos.

As described earlier, the above 63 terms represent a distillation of the 340 builtscape variables presented in Chapter III. That is, a distillation into a mutually exclusive set of architectural/organizational devices employed in a settlement's relationship to its natural setting -- a set of devices suitable for cross-cultural testing. Under the previously described conditions of our cross-cultural test, those devices repeated in both Indian and Hispanic test groups will be deemed culturally

independent landscape linkages. Such linkages explain a settlement's form in reference to a shared natural setting, a common structural theme, instead of a guarded cultural identity. To observe which of the 63 architectural/organizational devices are shared by both cultural test groups, some systematic framework of comparison is needed. We selected a matrix format for both its suitability to the task and its compatability with previous methods of analysis in Chapter III.

The above described 63 terms are listed on the vertical axis of the cross-cultural test matrix (see Figure 24 A-G). On the horizontal axis are listed the 15 settlements surveyed in Chapter III -- grouped according to their Indian or Hispanic identity. When one of the 63 architectural/organizational devices was employed as a means of landscape/builtscape linkage within a test site, a notation is made in the matrix cell -- that which corresponds with both device and test site. Further, the notation used is a number which associates the device with one of the 340 builtscape variables of Chapter III. For example, the matrix shows that Taos Pueblo employs compositional massing twice as two notations are shown in the cell which corresponds with Taos (Figure 24G, horizontal axis, number 1) and compositional massing (Figure 24G, vertical axis number 55). Also, these two notations are shown as the numbers 12 and 13. Going back to Chapter III, Page 133 , one sees that

12 and 13 on the landscape/builtscape matrix for Taos Pueblo refer to the "South Houseblock" (number 12) and the "North Houseblock" (number 13). Thus one can determine not only how frequently the device is employed but also the particular manifestation of its use. Looking further across the matrix one can observe that compositional massing (Figure 24G, number 55) is employed again in Tesuque Pueblo, as well as Abiquiu and Placitas. Thus compositional massing is a cross-cultural device, seen as a means of settlement and landscape relationships in both Hispanic and Indian examples -- it is part of our vocabulary of "landscape linkages." Finally, to make the cross-cultural matrix (Figure 24A-G) more readable, we broke the vertical axis down into five smaller segments with each segment contrasted to the entire set of 15 test sites.

figure 24A

cross-cultural test matrix

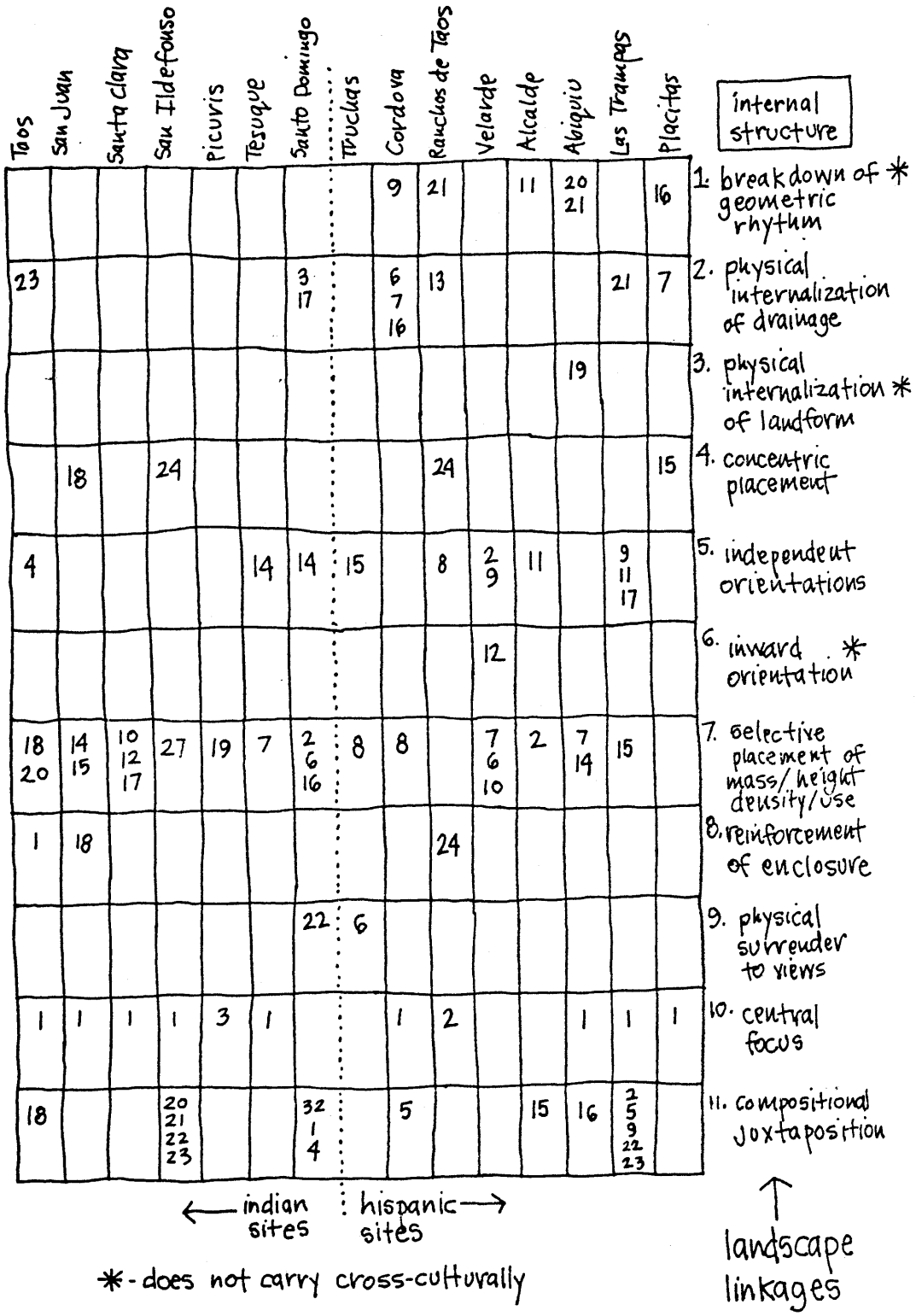


figure 24B

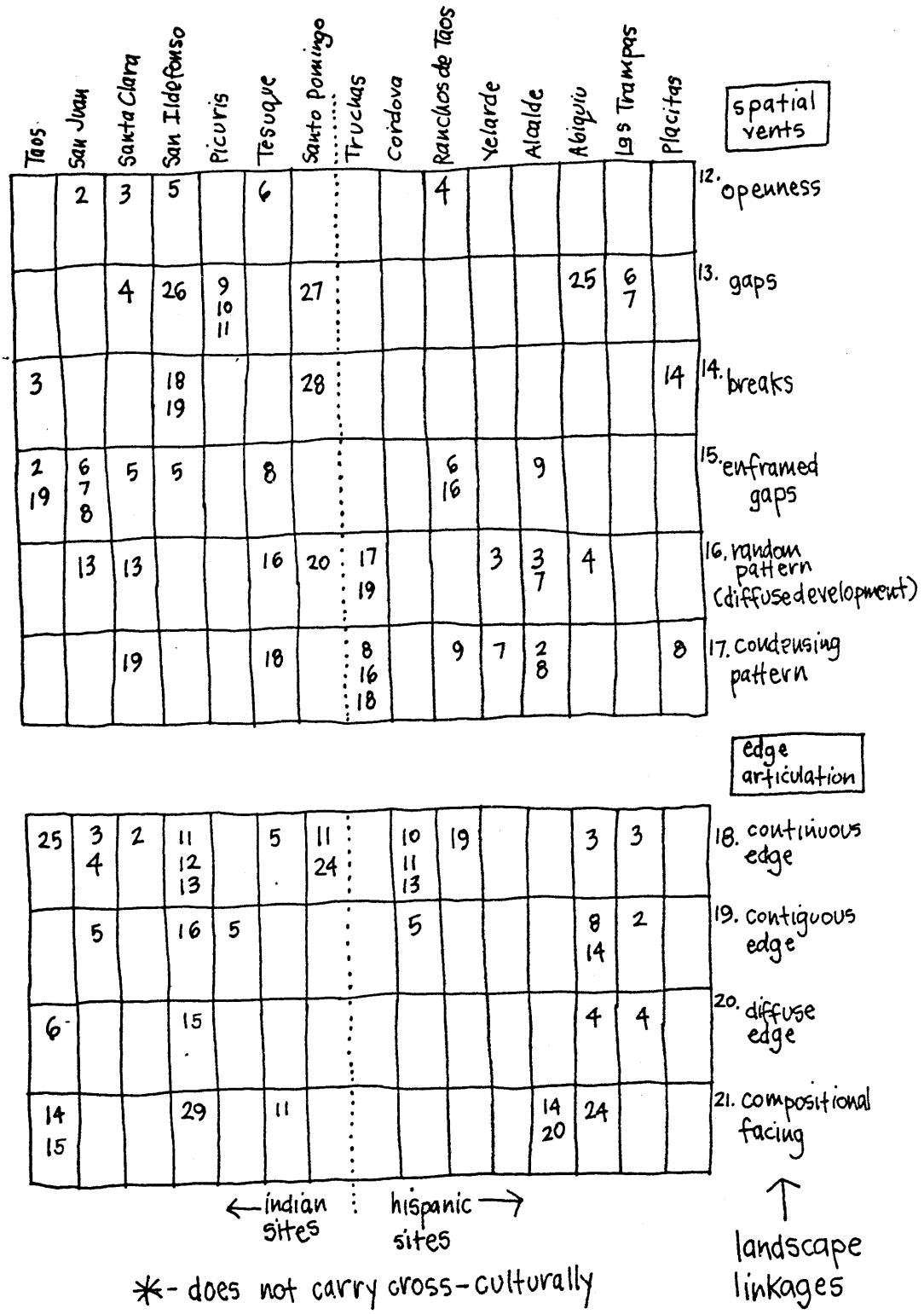
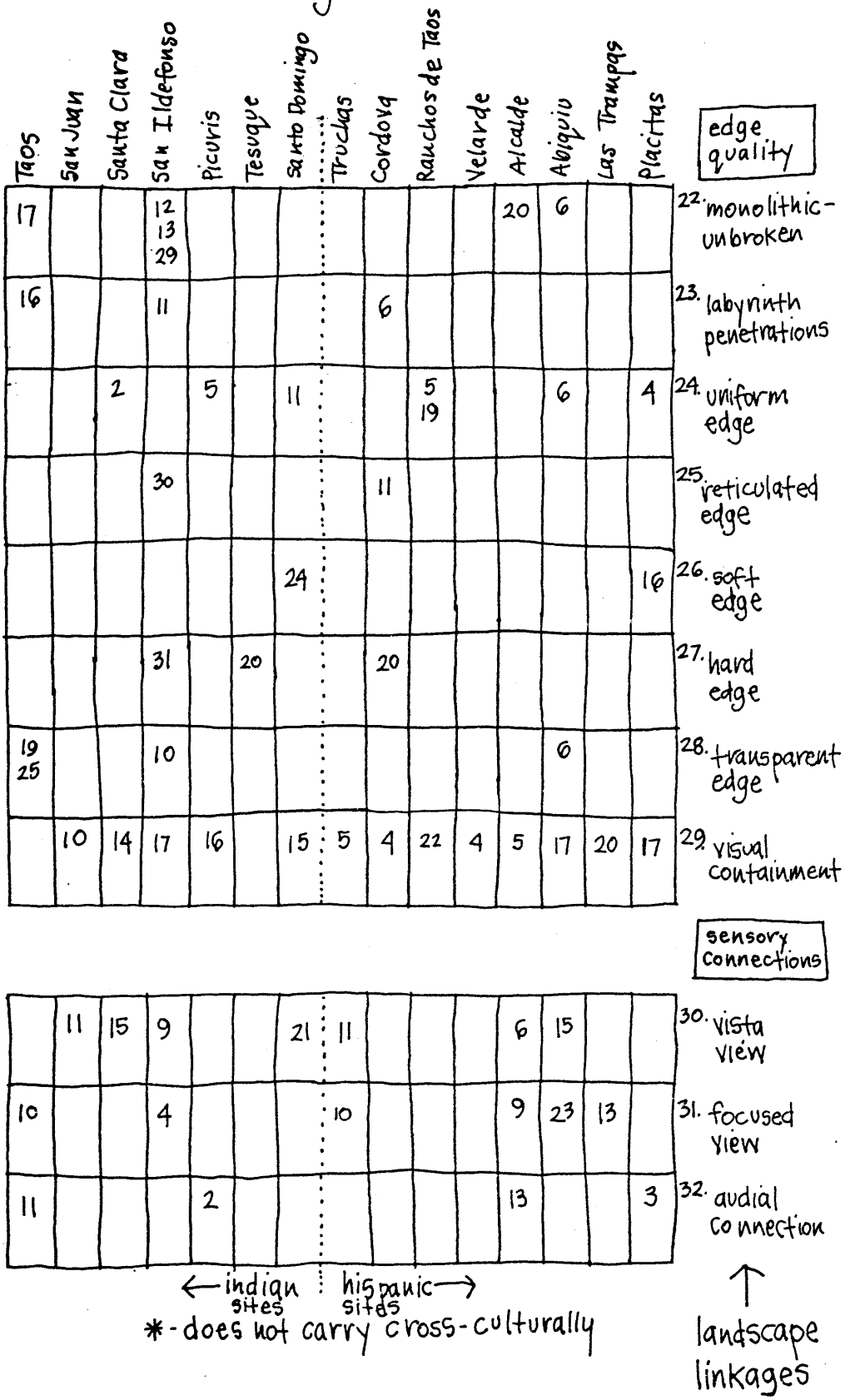

Taos
San Juan
Santa Clara
San Ildefonso
Picuris
Tesuque
Santo Domingo
Truchas
Cordova
Ranchos de Taos
Velarde
Alcalde
Abiquiu
Las Trampas
Placitas
spatial vents
12. openness
13. gaps
14. breaks
15. enframed gaps
16. random pattern (diffused development)
17. condensing pattern
edge articulation
18. continuous edge
19. contiguous edge
20. diffuse edge
21. compositional facing
← indian sites
hispanic → sites
landscape linkages
* - does not carry cross-culturally

figure 24C



* - does not carry cross-culturally

figure 24D

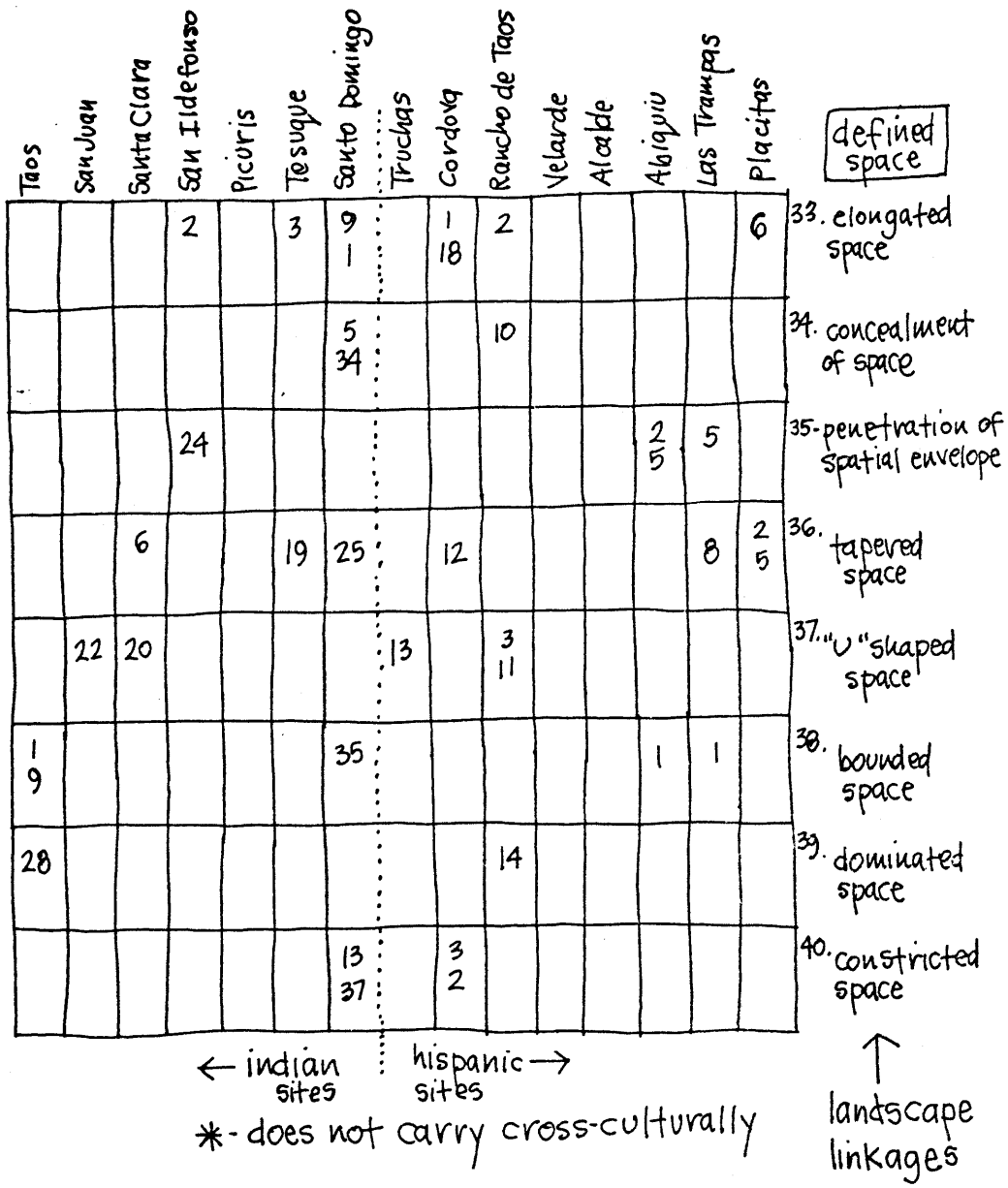

Taos
San Juan
Santa Clara
San Ildefonso
Picuris
Tesuque
Santo Domingo
Truchas
Cordova
Rancho de Taos
Velarde
Alcalde
Abiquiu
Las Trampas
Placitas
defined space
33. elongated space
34. concealment of space
35. penetration of spatial envelope
36. tapered space
37. "U" shaped space
38. bounded space
39. dominated space
40. constricted space
← indian sites
hispanic sites →
landscape linkages
* - does not carry cross-culturally

figure 24E

Taos	San Juan	Santa Clara	San Ildefonso	Picuris	Tesuque	Santo Domingo	Truchas	Cordova	Ranchos de Taos	Velarde	Alcalde	Abiquiu	Las Trampas	Placitas	alignments/ orientations
21 22	12 16 17 21	7 8		12 14	13	1 4 30	3 14 20	19	7	8 11	16 19	11	10	12	41. expression of direction
7		11			18		7 18								42. extension of direction
	9		3	18	4	7 8 10 19	2	18	18		1	10	19	15	43. expression of axis
	20		7			18 29	7 8 12	14			4 10 12			13 6	44. reinforcement of axis
5 27			6 8 14		9	26	4		23					17	45. directed visual orientation
		9		4		33									46. cardinal direction *

← indian sites | hispanic sites →

landscape linkages

*= does not carry cross-culturally

figure 24 F

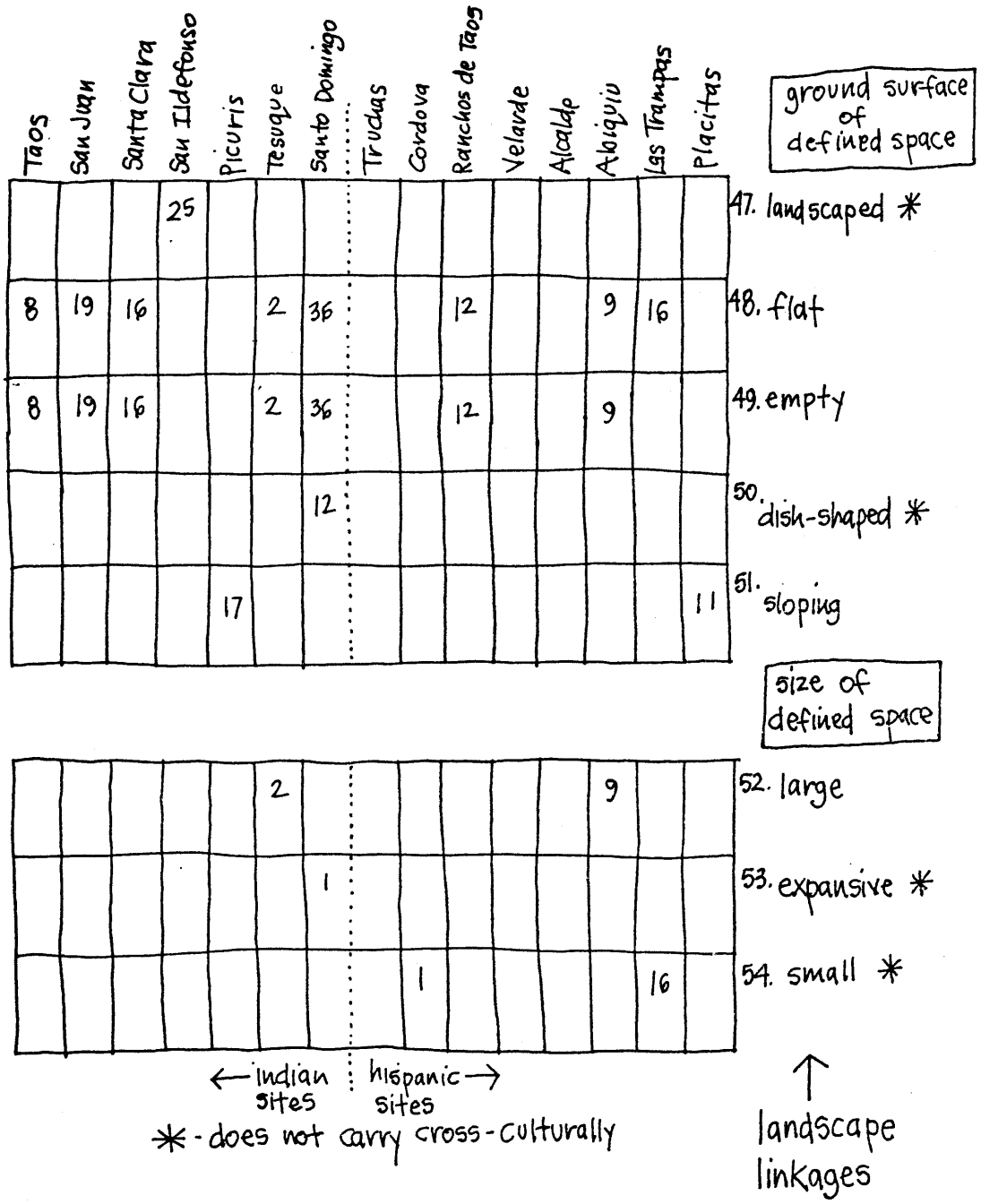
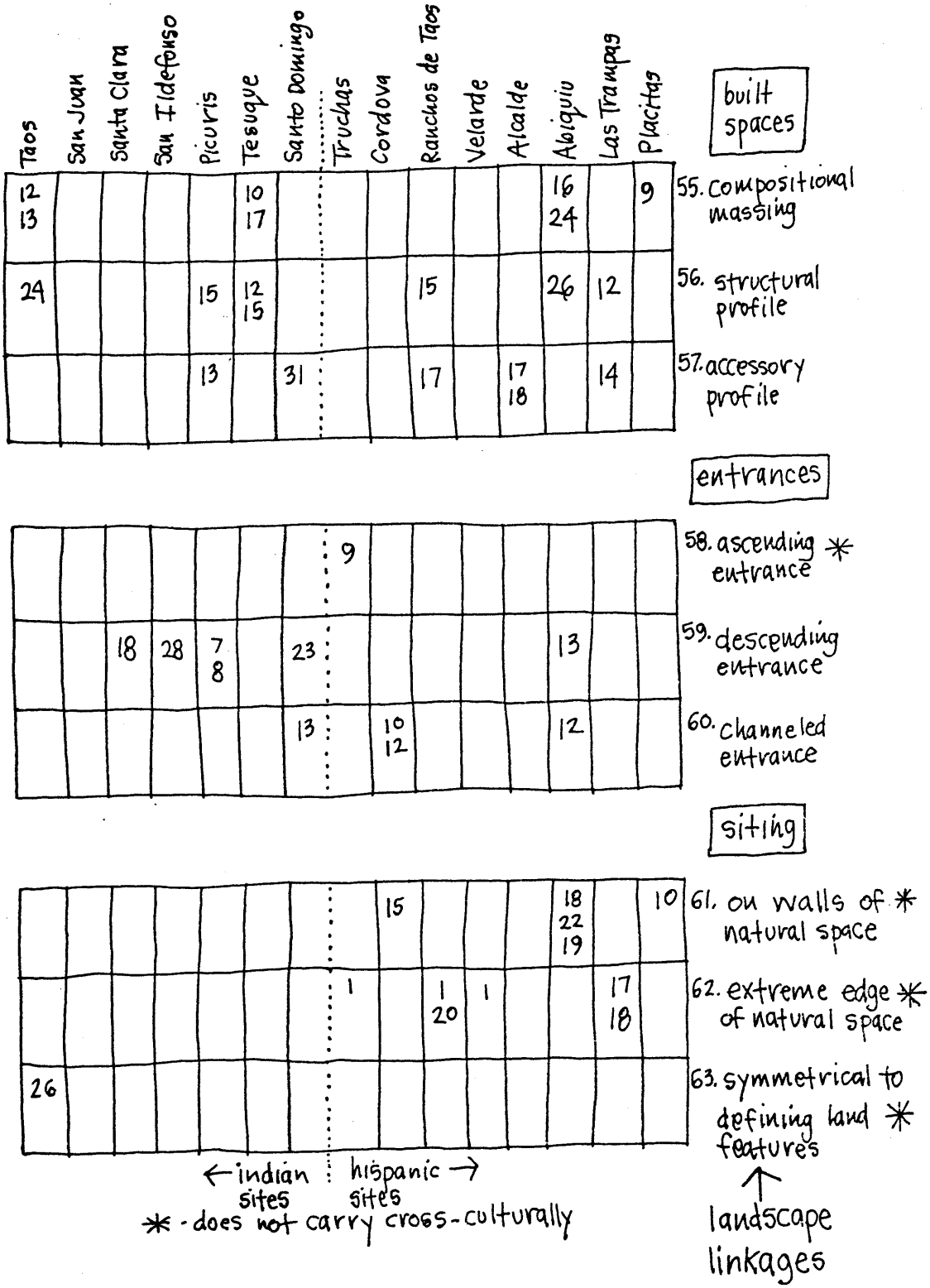

Taos
San Juan
Santa Clara
San Ildefonso
Picuris
Tesuque
Santo Domingo
Trudas
Cordova
Ranchos de Taos
Velarde
Alcalde
Abiquiu
Las Trampas
Placitas
ground surface of defined space
47. landscaped *
48. flat
49. empty
50. dish-shaped *
51. sloping
size of defined space
52. large
53. expansive *
54. small *
← Indian sites
Hispanic sites →
* - does not carry cross-culturally
landscape linkages

figure 246


Taos
San Juan
Santa Clara
San Ildefonso
Picuris
Tesuque
Santo Domingo
Truchas
Cordova
Ranchos de Taos
Velarde
Alcalde
Abiquiu
Las Trampas
Placitas
built spaces
55. compositional massing
56. structural profile
57. accessory profile
entrances
58. ascending * entrance
59. descending entrance
60. channeled entrance
siting
61. on walls of * natural space
62. extreme edge * of natural space
63. symmetrical to defining land * features
← indian sites
hispanic sites →
* - does not carry cross-culturally
landscape linkages

In reviewing the cross-cultural test matrix, one can see that 12 of the 63 architectural/organizational devices did not "carry"cross-culturally (numbers 1, 3, 6, 46, 47, 50, 53, 54, 58, 61, 62, 63). Of these 12, four can be characterized as structural rather than conceptual devices, that is, they are a product of the surrender of a built fabric to immediate site constraints. Number 1 (breakdown of plaza geometric rhythm) occurred in four Hispanic settlements (Cordova, Rancho-de-Taos, Alcalde, and Abiquiu). In each of these cases, irrigation patterns or an increasingly convoluted land surface, forced departure from a conceptual geometry. The same rationale can also explain why devices 3 (physical internalization of landform), 54 (small scale built space), and 58 (ascending entrance) are observed within certain Hispanic sites. That is, these devices are structural concessions to physical pressures of encroaching landforms.

As described in the reference framework, internal adaptations to site constraints are characteristic manifestations of an Hispanic attitude toward land. Thus ,devices 1, 3, 54, and 58 are culturally related and predictably would not carry cross-culturally. It is not that site constraints are a cultural characteristic but the physical pressure of such constraints can be associated with Hispanic priorities in making locational decisions. The reference framework describes

Hispanic attitude toward land as shaped by the necessities of subsistance rather than by religious philosophy (the land orientation of Indian people). Thus it seems that locational decisions which determine the siting of an Hispanic settlement are influenced by the operational concerns of agriculture. Conversely, siting of an Indian Pueblo is more influenced by ritual meaning associated with the landscape. Thus, there is an Hispanic propensity to sacrifice gentler siting for the sake of maximizing farm land.

It is exactly the cultural distinctions described above which explain four other architectural/organizational devices which failed to "carry" cross-culturally in the cross-cultural matrix. These are numbers 61 (siting on the walls of natural space), 62 (siting on extreme edge of natural space), 63 (siting symmetrical to defining landforms), and 46 (cardinal direction). Devices 61 and 62, as can be predicted, are seen only within the Hispanic test group and again are a manifestation of the previously described cultural attitude toward land. In order to maximize land available for cultivation, development is sited on the periphery of arable soil. In contrast to this, devices 63 (siting symmetrical to defining landfeatures) and 46 (cardinal direction) are manifestations of the Indian's cultural propensity to view himself in the

center of a ritual cosmos fixed on four sides by landscape references -- as described in Chapter II. Thus the cross-cultural test is strengthened by the fact that caught within it were those devices which can be directly associated with the thematic cultural distinctions described in our reference framework. This result reinforces the cross-culturalness of those devices which did "carry."

Two other variables which were not repeated in both Hispanic and Indian test groups were 47 (landscaped space) and 50 (dish-shaped space). Device 47 was only seen in one test site, and this was not even repeated within the cultural group. This suggests that landscaping was less related to the general landscape and more related to individual desire to embellish space or provide cool shade in a hot sun. Similarly, device 50 (dish-shaped space) was observed only in Santo Domingo and thus did not even repeat within the cultural group. The isolated occurrance of this in Santo Domingo's narrow dance plaza suggests it is more a product of centuries of ceremonial dancing, rather than a response to general landscape conditions.

Device number 6 (inward orientation) also did not carry and as with the above examples occurred in only one test site (Velarde). Review of Velarde's landscape/builtscape matrix

reveals that "inward orientation" was not a landscape relationship but a negation of relationship -- expression of an introverted rather than an extroverted concept. Thus, "inward orientation" is inconsistent with the rest of the vocabulary -- it is a negative rather than positive term -- the opposite of other terms in our list. Inasmuch as we are documenting relationships with, rather than isolation from the landscape, "inward orientation" would understandably not carry.

Finally, device number 53 (expansive built space) did not carry. Review of the distribution of test sites over the "landform districts" described in Chapter I reveals why. As discussed in the initial hypothesis test of Chapter I (page 72), Hispanic towns with plazas did not occur in "valley bottom" landform districts. However, Pueblos with plazas were found mostly within these districts. Thus, the scale of natural enclosure characteristic of Hispanic sites with plazas would be predictably much smaller than the expansive valley setting of Indian Pueblos. Given, that the scale of enclosed space is a conceptual response to natural scale, plazas within Hispanic settlements would have no occasion to be expansive. Finally, natural space which can be characterized

as expansive would be defined by landforms beyond the second ring on our "sacred circles" maps. As described in the field methodology, the first and second rings are associated with Hispanic "scale of consciousness." Thus one can predict that landforms beyond the second ring would have little or no influence on settlement form. It was for this reason that our initial validation of the hypothesis revealed that Hispanic villages in "valley bottom" district were plazaless. As a result, one can say that "expansive builtspace" is culturally related and its failing to carry in the cross-cultural matrix is not only predictable but reinforces the cross-culturalness of our vocabulary.

Having survived the cross-cultural continuity test, the following 52 architectural/organizational devices constitute the basis of a "landscape linkage vocabulary."

Internal Structure

1. Physical internalization of drainage
2. Concentric placement
3. Independent orientations
4. Selective placement of mass/height/density/use
5. Reinforcement of enclosure
6. Physical surrender to views
7. Central focus
8. Compositional juxtaposition

Spatial Vents

9. Openness
10. Gaps
11. Breaks
12. Enframed gaps
13. Random pattern (diffuse development)
14. Condensing pattern

Edge Articulation

15. Continuous edge
16. Contiguous edge
17. Diffuse edge
18. Compositional facing

Edge Quality

19. Monolithic (unbroken)
20. Labyrinth penetrations
21. Uniform edge
22. Reticulated edge
23. Soft edge
24. Hard edge
25. Transparent edge
26. Visual containment

Sensory Connections

27. Vista view
28. Focused view
29. Audial connection

Defined Space

30. Elongated space

31. Concealment of space

32. Penetration of spatial envelope

33. Tapered space

34. "U" Shaped space

35. Bounded space

36. Dominated space

37. Constricted space

Alignments/Orientations

38. Expression of direction

39. Extension of direction

40. Expression of axis

41. Reinforcement of axis

40. Directed visual orientation

Ground Surface of Defined Space

43. Flat

44. Empty

45. Sloping

Size of Defined Space

46. Large

Builtshapes

47. Compositional massing

48. Structural profile

49. Accessory profile

Entrances

50. Descending entrance

51. Channeled entrance

The cross-cultural test presented in this chapter is only the first of our three hypotheses tests. Chapter IV deals with the continuity test by applying our vocabulary as derived thus far, to Santa Fe of 1768 and observing how these observations change at various points in time between 1768 and 1930. Santa Fe was chosen not only for its unique and rich sources of historic data but as a point of cultural confluence. Thus observations over time involve cultures jointly rather than separately as done in the previous test.

CHAPTER V

TEMPORAL CONTINUITY TEST

In our earlier construction of a methodological framework, two conditions of continuity were defined. These are cross-cultural continuity and temporal continuity. Of these conditions, this chapter deals with the latter while Chapter IV dealt with the former. For landscape linkages to meet the conditions of temporal continuity, they must be stable over time. That is, they must describe some unchanging dimension of a settlement which serves to explain its changing dimensions throughout a long period of history -- they must identify a structural theme. Thus, landscape linkages which are both culturally independent and stable over time can explain a settlement's unique aspects of form (expressed by a particular syntax of linkages) in terms which reconcile the site to its own location (cross-cultural continuity) and history (temporal continuity). How well these linkages explain physical differences is the subject of Chapter VI -- the differentiation test.

Because temporal continuity implies the stability of landscape linkages despite physical change, it becomes important that the test site selected, in this instance, not be isolated from the forces of change. In the previous test, many of those sites selected as culturally distinguished

were also sites isolated from outside influence -- isolated on reservations or in "upland fastnesses."[1] Historically, it is this contact with outside influence which precipitates change. Within the study area, change can be particularly associated with the arrival of Indian, Hispanic, and Anglo settlers. Each introduced not only a unique cultural orientation but technological innovation. In settlements where the three came together, the forces of change were particularly active. Further, the cultural differences of these three settler groups, as described in the reference framework, and their associated architectural differences, makes the extent of one's influence over the other (the extent of change) observable. However, observation over time requires the historic resources necessary to reconstruct previous states of existence so a comparison can be made. Thus, the selection of a site appropriate to the purpose of observing changes over time is based upon the following conditions:

A. A settlement which has existed over a significant period of time.

B. A settlement of Indian, Hispanic, and Anglo confluence.

C. A definable district or point of confluence, within the settlement, which one can study over a period of history.

---

1. Van Dresser, Peter, A Landscape for Humans: A Case Study of the Potentials for Ecologically Guided Development in an Uplands Region, Santa Fe, Jene Lyon Publishers, 1972.

D. Available archival and other historic data, sufficient to reconstruct former states of existence.

E. A settlement of manageable size.

SITE SELECTION

On the basis of these criteria, we selected Santa Fe from our original set of 20 sites. Santa Fe was originally the site of an Indian pueblo, sometime prior to 1598 (Spanish arrival). In reference to this, Ralph Emerson Twitchell (noted New Mexico historian) writes:

> "There is no doubt, ... that on the site of the present city (Santa Fe) there were at least one and possibly more pueblos, but these were abandoned and in ruins. Excavations for foundations and cellars for modern buildings in close proximity to the plaza in Santa Fe have uncovered skeletal remains, pottery, walls and other evidence that in pre-Columbian times, a large population occupied the areas covered by portions of the present city. [1]

In 1610, under the leadership of Don Juan Onate, Santa Fe was founded as a new territorial capital of Spain's western frontier. Originally (July 11, 1598), the capital had been located at San Juan Pueblo -- named by Onate as San Juan de los Caballeros. Within three years, it was relocatd across the Rio Grande and named San Gabriel. Finally in 1610, its present location along the Rio Santa Fe was selected [2].

In reference to this early Spanish settlement, Paul Horgan notes:

---

1. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capital, Santa Fe. New Mexican Publishing Co., 1925, p. 20-21.
2. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capital, Santa Fe, New Mexican Publishing Co., 1925 p. 17.

> "As for the city itself, the newly arrived notary (1620) would soon see that it consisted of two groups of dwellings. One was formally laid out in relation to the plaza, of which the place was the most prominent feature ... It had evidently long been regarded as a desirable site, for when the city was laid out in 1610 the early settlers found walls of earlier Indians right there. Indeed, some of the walls, though parts of ruins, were in such good repair that when this very palace was built, they were made use of as they stood. [1]

In 1680 Spanish colonists were driven out of New Mexico and Santa Fe again inhabited by Indians -- specifically Tanoans from Galisteo. Santa Fe remained a Pueblo of considerable size until the Spanish reconquest of 1692. Paraphrasing military diaries which describe this triumphal retaking by General Don Diego De Vargas, Twitchell notes:

> "The plaza was evidently divided into two sections, and on three sides, the east, south and west, were built the houses of Indians, all of them connected and extending entirely around the plaza. These houses were, some of them, three and four stories high ... In the plaza, the Indians had built two large estufas (kivas) ... [2]

Except for the palace of the Governors, and adjoining "casas reales" (residences), every previous Spanish building had been destroyed in Santa Fe's 1680 seige. [3] Yet redevelopment under Indian occupation deviated little from its former structure or

---

1. Horgan, Paul, The Centuries of Santa Fe, Santa Fe, William Gannon Publishers, 1976, p. 14.
2. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capital, Santa Fe New Mexican Publishing Company, 1925, p. 137-138.
3. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capital, Santa Fe New Mexican Publishing Company, 1925, p. 136.

organization. This settlement form prevailed even after further redevelopment subsequent to Spanish reconquest. Our earliest graphic record of Santa Fe's appearance comes from Urrutia's detailed map of 1768 (Figure 26). Being a pictorial map, it clearly shows a pattern of development not unlike that beheld by Paul Horgan's notary.

On August 19, 1846 Santa Fe again changed hands as General Stephen Watts Kearny raised a U.S. flag over the Palace of the Governors. However, Santa Fe retained its century old status as an administrative capital -- a status which it retains today. Also, the even older plaza remained, and still remains, the center of this settlement, as evidenced by Paul Horgan's description of town life in late 1840:

> " ... the soldiers after visiting in Mexican towns below, were struck by what they called the 'United States look' of the place ... the American merchants, at last sure of the protection they had needed for thirty years, were running their emporiums full blast giving to the plaza a new character. There were trophies too in the plaza: Governor Armijo's artillery, which he had been abandoned in the countryside ... The plaza was 'level, unpaved, and rather sandy'... all around the plaza in front of the shops and dwellings and the Governor's house was a continuous covered walk." [1]

Since Santa Fe's founding, the plaza has never lost its importance as a town focus, and today is the very heart of a modern central business district.

---

1. Horgan, Paul, The Centuries of Santa Fe, William Gannon Publishers, 1976, p. 201

In light of test site selection criteria (earlier described), it is clear that Santa Fe is not only a settlement of considerable age, but also a point of cultural confluence. Within its bounds, the plaza has been a specific focus of that confluence. Therefore, the temporal continuity test will specifically embrace those portions of Santa Fe, adjacent to its plaza. In focusing on a particular section of the city, the test site complies with criterion E (manageable size). In April 1976, the Santa Fe Planning Department undertook a survey of Santa Fe's "Historic Structure and Townscape." Our delineation of a test site parallels that study area identified for the above mentioned survey. In justification of this study area, the Planning Department's survey report states:

> "The visual survey study area was chose on the basis of historical importance as well as public usage and accessibility..." [1]

In compliance with selection criterion D, Santa Fe is unique in the amount of data available for historic reconstruction. Available for our test are numerous writings of historians and novelists, as evidenced by the previous quotes. Also available are detailed accounts and descriptions by

---

1. Planning Department, Santa Fe, New Mexico, Historic Structure and Townscape, Santa Fe, 1977, p. 30.

military journalists and scribes of both the Spanish and U.S. armies. Also available from the Museum of New Mexico is an excellent collection of photographs recording visual changes around Santa Fe's plaza since the late 1850's. Finally, a particularly rich resource is the information recorded on both military and Sandborn maps. In addition to Urrutia's map of 1768, there are two excellent Corps of Engineers maps from 1846 (Lts. W.H. Emory and J.F. Gilmer) and 1846-47 (Lt. J.F. Gilmer), as shown in Figures 33 and 34. Sandborn maps showing detailed information on streets, structures, materials, building projections, landuse, and dimensions are available from 1883 to 1930 at approximately 10-year increments. Thus map information becomes the basis for the temporal continuity test and other data sources are used to supplement and complete that picture.

THE TEMPORAL CONTINUITY TEST FRAMEWORK

Using this map resource, the temporal continuity test can span a significant time period from 1768 to 1930. Prior to 1768 no actual graphic record is available. Despite some earlier, detailed written accounts of Santa Fe, Urrutia's map remains the earliest source of information sufficient for test conditions. Conversely, we selected 1930 as the other terminating point of the continuity test, not because insufficient information is available after that date but because a growing historic preservation movement begins to influence Santa Fe's architectural appearance. Such organizational and ultimately legal (Santa Fe Historic District Ordinance -- 1957) manipulation of architectural appearance made physical changes in Santa Fe inconsistent with the unmolested trends evidenced prior to 1930. A major force in the Historic Preservation movement was (and is) a civic organization called the Old Santa Fe Association. The society was incorporated on May 29, 1926 with the following objective:

> "To preserve and maintain the ancient landmarks, historical structures, and traditions of Old Santa Fe, to guide its growth and development in such a way as to sacrifice as little as possible of that unique charm, born of age, tradition and environment which are the priceless assets and heritage of Old Santa Fe." 1

---

1. Church, Gordon M., The Aesthetic Urban Landscape: Attitudes Toward Structural Surfaces in the City, Master's Thesis in Department Of Geography, Lincoln, University of Nebraska, 1973, pp. 67-68.

Since its beginning, the organization's membership has been, and remains, an influential one with sufficient political and financial presence to reshape Santa Fe's structural surface as architecture was specifically identified with the city's "unique charm, born of age, tradition and environment." Consistent with the goal conflicts of preservation defined earlier in the thesis introduction, one again sees the dual objectives of continuity and differentiation being persued and proclaimed at a stylistic level of comprehension. Differentiation is expressed in the words "unique charm" and the two dimensions of continuity expressed in the terms "born of age, tradition (temporal continuity) and environment" (continuity over space - cross-cultural continuity).

Between 1768 and 1930 four additional chronological points are chosen -- making sequential comparisons through time possible. These chronological points correspond to the richness of available data and to significant chapters in the city's history. Specifically, the chronological points are:

1. 1768 -- earliest graphic record of Santa Fe, made during Spanish/American control of the territory. Written historical data sources are used to supplement this map -- see appendix page 354.

2. 1846 -- beginning of U.S. control of New Mexico. A map of Santa Fe was made by Lt. J.F. Gilmer and written historical accounts are used to supplement this map -- see appendix p. 355.

3. 1883 -- first of Sandborn map series with minute detail on materials and landuse. 1883 roughly corresponds with the beginning of a railroad era as extensions of the Atchison, Topeka and Santa Fe Railroad brought the first trains to Las Vegas, New Mexico on April 4, 1879. [1] Supplemental information comes from the photographic collection of the New Mexico Historical Museum.(Some of the photographs are reproduced in this chapter)

4. 1898 -- era of growth and modernization as evidenced by an April 19, 1894 article in the Santa Fe New Mexican:

> "Santa Fe's new telephone system is now in full operation ... the 65 instruments ordered will be in position before this is printed and there is a demand for more.

also Oliver La Farge notes the 1890's as a period when

> "Santa Fe was struggling hard to become banal and calling it progress." 2

The 1898 Sandborn map is supplemented by excellent photographs from the New Mexico Historical Museum and the

---

1. Jenkins, Myra Ellen, A Brief History of New Mexico, Albuquerque, University of New Mexico Press, 1974.
2. La Farge, Oliver, Santa Fe: The Autobiography of a Southwestern Town, Norman, University of Oklahoma Press, 1959, p. 137.

published collection of Philip Embury Harroun. Further supplementation comes from written accounts -- see appendix page 356.

5. 1913 -- January 16, 1912 New Mexico becomes the fourty-seventh state and enters a period of growing cultural awareness. This awareness ultimately takes a very stylistic form after 1930 but during the early 20th century, it was expressed in establishment of numerous cultural institutions such as the Museum of Archeology -- described in the Santa Fe New Mexican:

> "The exponents of art, science, literature, law, medicine, and culture in its true sense, formed an interesting gathering at the famous Old Palace when the formal opening of the Museum of Archeology, rich in art and historic treasures, took place on Saturday evening (August 22, 1910).

Further the 1912 city plan commission made proposals for street, park and river improvements with special designation of "ancient streets to be left undisturbed." [1] This is particularly relevant to the continuity test as it reflects awareness of significant urban structure. Commenting on this 1912 recommendation, the present City Planning Department notes:

> "Within the general context of historic preservation,

---

1. Planning Department, Santa Fe, New Mexico, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, 1977, p. 3.

this is a concept which may be revised and expanded to include other aspects of Santa Fe urban structure..." 1

The 1913 Sandborn map is supplemented by the 1912 plan commission material, photographs from the New Mexico Historical Museum and written accounts -- see appendix page 357.

6. 1930 -- For reasons presented earlier, this point terminates the continuity test. 1930 Sandborn map information is supplemented by photographs, planning reports of the 1920's and written accounts -- see appendix page 357.

---

1. Planning Department, Santa Fe, New Mexico, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, 1977, p. 3.

THE 1768 LANDSCAPE/BUILTSCAPE MATRIX

A. The landscape of Santa Fe

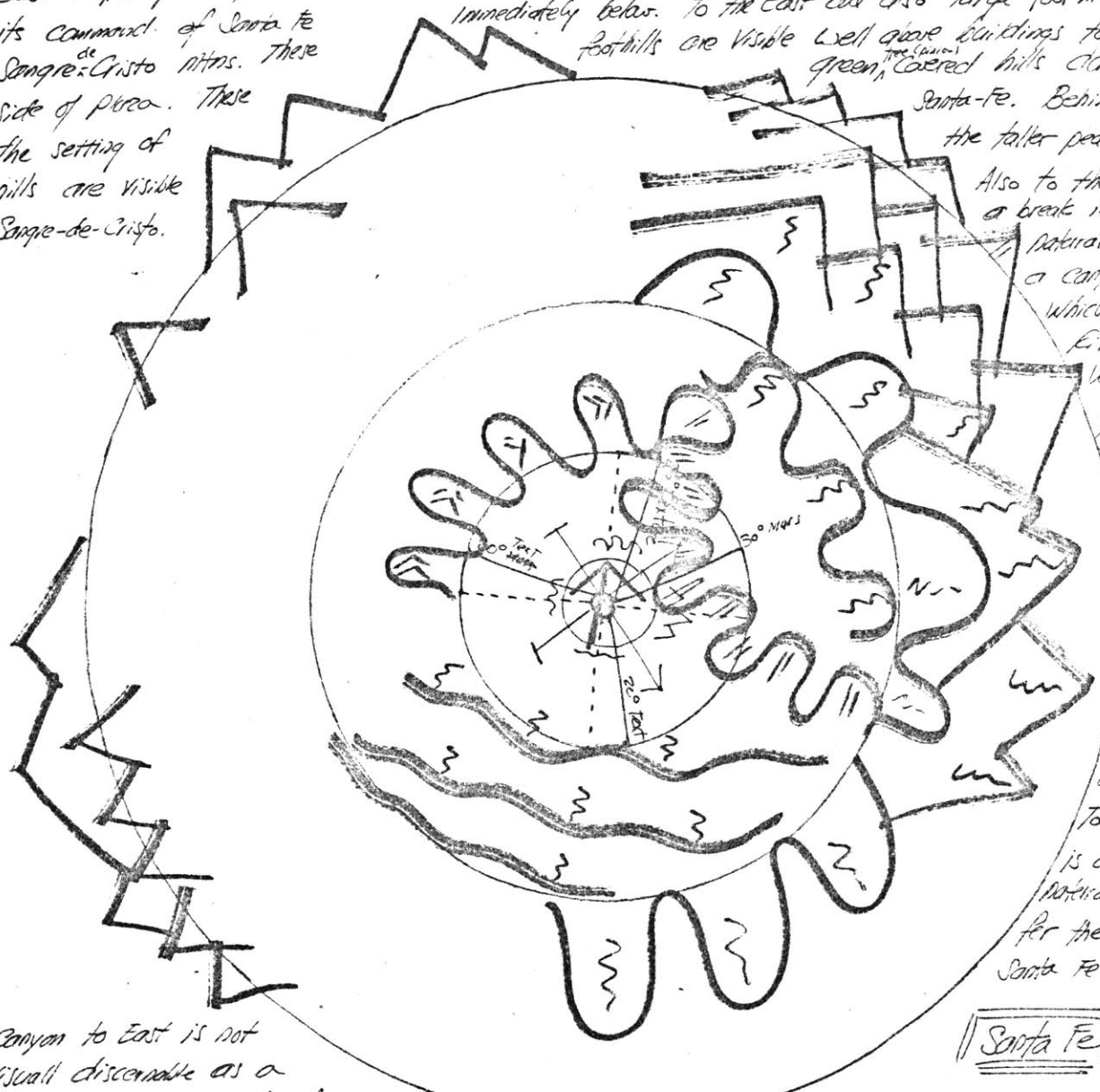
To undertake the temporal continuity test, there remains the task of documenting those landscape/builtscape linkages which can be associated with Santa Fe of 1768 and evaluating the increasing or diminishing influences of these linkages at subsequent chronological points. Urrutia's pictorial map of 1768 and historical wirtings of the same general time are the basis for builtscape documentation. Given the relative inflexibility, and therefore stability, of Santa Fe's natural setting, one can document present landscape conditions as an approximation of conditions in 1768.

Figure 25 is a sacred-circle map of Santa Fe's present landscape setting. It is identical in construction to the sacred-circle maps of Chapter III. Qualitative analysis of Santa Fe's setting is supplemented by the same qualitative data sources identified in Chapter III. These include aerial photographs, U.S.G.S. quadrant maps, geologic profiles, and so on. From the sacred-circle analysis and its supplemental information, is distilled a set of landscape variables for a 1768 landscape/builtscape matrix.

As described earlier in the sacred-circle analysis, Santa Fe

figure 25

Santa Fe is an enclosed space at the first ring, The "boundary" running from west to North is a long straight edged bluff which is visible as a back drop to buildings on the west side and visible as a termination of San Francisco & Palace Streets. The bluff is a monolithic, unbroken formation making a long straight horizontal line. To the North is an indentation in the continuous definition which visually reads as a slight gap in natural continuity. The natural edge running from North to East is a steep escarpment, used by the military in 1846 as the site of Fort Marcy because of its command of Santa Fe immediately below. To the East are also large foothills of Sangre de Cristo mtns. These foothills are visible well above buildings to East. Side of plaza. These green, tree (pinon) covered hills dominate the setting of Santa Fe. Behind these hills are visible the taller peaks of Sangre-de-Cristo. Also to the East is a break in the natural edge for a canyon through which Santa Fe River enters Valley.



To the South is a gentle slope up away from River but hill is high enough to extend well above eye level. To the Southwest is a large break in natural definition for the exit of Santa Fe River.

Santa Fe

Canyon to East is not visually discernable as a break in continuity of Eastern edge - but a fold in dominant landforms to east - presence of river makes the canyon perceivable. Break to Southwest is visually discernable as a break of edge continuity and through it expands the flatter Santa Fe plain. Break to the South reads as the mouth of a canyon because behind it are visible larger foothill landforms. A major element of this space is the Santa Fe River which is an axis for valley, emerging from dominant hills and penetrating through to plain. land on both sides of river slopes down to it as river sits within a depression within the valley. The slope of the valley is visually discernable as an elongated E/W disk. This is reinforced by E/W extension of irrigation ditches, the E/W flow of drainage.

Views to North, South, & West are blocked by natural landforms, leaving the Eastern view as as the only permitted vista - View to the East is a vista of Sangre-de-Cristo foothills with a view of

sits in an enclosed depression which is bisected by the Santa Fe River. To the east, the river emerges from a significant canyon. As it flows southwest, Santa Fe's enclosure gradually surrenders to the expanse of a broad plain. The enclosure itself is defined northwest, north and east by an "abrupt escarpment" and along the south by a gentle slope. Also to the east, land rises in hierarchial masses which culminate in southerly peaks of the Sangre-de-Cristo mountains. Consequently, the sequential buildup of landforms captures visual orientation in this ascent and focuses it on mountains east of Santa Fe's site. Views in other directions are contained by natural definition, thus reinforcing this visual orientation.

Equally influential is the Santa Fe river which provides a visually strong east/west axis that is physically reinforced by the irrigation pattern it once dictated. This irrigation pattern became the functional rationale for legally recognized land division among Spanish settlers and thus an underlying framework for later subdivision by urban real estate spculators. As a result the river, in this small natural enclosure, ultimately shapes the future framework of human settlement -- a consequence recognized in an excellent study done by the Santa Fe Planning Department:

> "This land pattern still predominates in the area southwest of the Indian School, with long narrow parcels

> which are often not suitable for subdividing, because of lack of access to the back portion. Due to multiple ownership, it is difficult to consolidate narrow strips into larger tracts; hence the southwest area is still relatively undeveloped. 1

Characteristics of Santa Fe's setting as described above are clearly those identified as most influential on settlement form in the 1768 landscape/builtscape matrix (Figure 27) Landscape variables which describe visual orientation (6, 13, 17), the river and its related drainage/ irrigation pattern (2, 3, 10, 11) and the canyon (7) are those variables most frequently connected (conceptually or structurally)with builtscape features.

B. The Builtscape of 1768

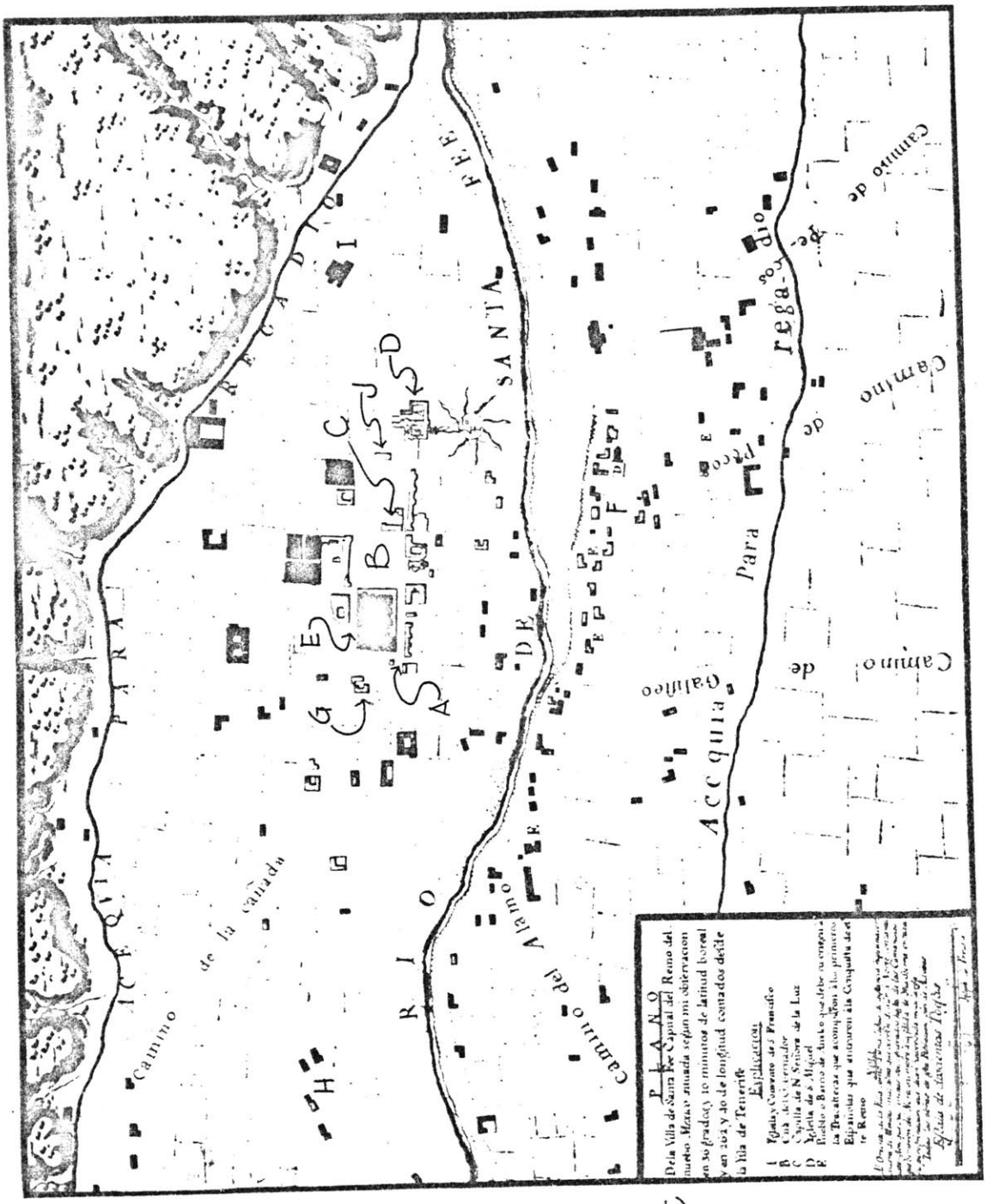
Within the valley enclosure, space is not uniformly defined as gentle slopes to the south eminate from the river's very bank. To the north,land lies much flatter as it extends from the river, finally thrusting upward in an abrupt escarpment. The resulting spatial configuration is one where the river spans the south edge of a "U" shaped indentation in natural definitions (shown on sacred circle map). It is within this indentation that Santa Fe, as seen on Urrutia's 1768 map,is located. Clearly within the map (Figure 26) are

---

1. Planning Department, Santa Fe, New Mexico, Historic Structures and Townscape , Santa Fe, 1977, p. 153.

figure 26

Urrutia map - 1768



(map courtesy Santa Fe Planning Department)

recognizable a number of builtscape features previously seen in Hispanic villages and Indian Pueblos. However, most significant is the conceptual strength of San Francisco street (A) relative to the plaza (B) or other surrounding development. The administrative and functional importance associated with the plaza (as described earlier in this chapter) would seemingly result in its being the most strongly articulated element in Santa Fe. However, Urrutia's map clearly shows that parts of it are rather weak as development which could have strongly defined the plaza has instead contributed to the strength of San Francisco Street (A). Physical weakness of plaza definition is more dramatically revealed in the fact that its eastern edge was considered the church (D) and not the group of structures perpendicular to San Francisco Street at point (C). Thus the plaza was not square but rectangular as Twitchell notes:

> "The plaza of this ancient capital then, before the revolution of 1680 and for many years after the reconquest in 1692-1696, was of rectangular shape being about twice as long from east to west as it was from north to south. The striking features of the center of the villa, facing the plaza, were the palacio real (Palace of the Governors) on the north and the church and monastery ... on the east. 1

It would appear that structures located at point (C) actually further weaken the plaza in order to reinforce the corridor

---

1. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capital, Santa Fe New Mexican Publishing Company, 1925, p. 57.

frontage of San Francisco Street and consequently made the plaza smaller. Therefore, it seems clear that San Francisco Street is the strongest conceptual element-- not the plaza -- providing an equally strong east/west axis about which the rest of Santa Fe is loosely organized -- a relationship not unlike the river to its natural space and dependent irrigation.

The two strongest lineal elements shown in Urrutia's map are the river and San Francisco Street,which sit parallel to each other. The plaza, in fact, is more a lateral expansion of San Francisco Street than a separate element, not unlike the above described natural edge indentation. Further the church,which supposedly bounds the plaza's eastern edge does not actually front the plaza as one would expect but aligns symmetrically with San Francisco Street and a subordinate structure (J) centers the plaza. As a church of similar form (double spire) is presently built on this same location, one can now observe that when viewed from San Francisco Street, church spires symmetrically embrace that gap from which the Santa Fe river emerges. Also, these spires symmetrically lock the cleft of the dominant defining land feature between them as seen in the photograph on page 293 . In this way, visual orientation,orchestrated by hierarchial landmassing,is reinforced by a man-made focus as well as structural massing.

Structures located at point (C) do serve to articulate an easterly gap in plaza definition thus reinforcing east/west outlets from the plaza space. In fact east/west outlets are the only exits which have physical reinforcement beyond plaza frontage as any others simply open into fields. Particularly these reinforced outlets are San Francisco Street (which is terminated east by the church but carried a significant distance west by continuous frontage) and Palace Street (E) (carried equally east and west). However, where all development along San Francisco rigidly respects its right-of-way; development along West Palace (point G) begins to encroach on the right-of-way alignment. Thus, there is a tendency for Palace Street to penetrate east and San Francisco Street to penetrate west This is the present structure of these two streets, and a geometric parallel to bending of the river course (see sacred circle map). The function of this is more recognizable today as both Palace and San Francisco Streets run along the river's bank in their respective east/west extremes.

The geometry of San Francisco and Palace Streets characterizes a general east/west orientation of conceptual organization, which is reinforced by a subsequent east/west direction of views from within the plaza (point B) as unbroken, continuous frontage north and south . obscures views in those directions. However,

easterly views are most dramatized by articulated openness and the church's massing. Thus, there exists a parallel between natural and built impact on views. Further reinforcement of east/west organization comes from the more organic lineality of the "barrio de analco" (point F). In fact, the entire development pattern maintains an overall east/west configuration which is naturally reinforced by landmassing, irrigation/drainage patterns, and the east/west river axis. However, the directed character of development quickly breaks down as one moves further west (point H) (particularly southwest) toward the open westerly plain, previously described. As observed by the Santa Fe City Planning department, this random quality is still evident in Santa Fe's current urban fabric. The only other point at which building alignment deviates from a general east/west pattern is northeast and east of the plaza (point I). Here, the escarpment begins to encroach upon the river as it narrows toward Santa Fe canyon, thus impinging upon any conceptual framework and dictating a structural response.

C. The Matrix

As the above general descriptions of Urrutia's map would suggest, there are four sets of builtscape variables identified in the 1768 landscape/builtscape matrix (Figure 27) as most densely connected (conceptually and structurally) to landscape features. The variables are those which describe San Francisco Street as a strong axis and channeled space (3, 6, 9), those which describe visual direction to the east (1, 5, 13), those which describe the expression and reinforcement of east/west alignments (8, 14, 21), and finally that which describes deviation from east/west alignment near Santa Fe canyon (4). This closely parallels the constellation of landscape features identified earlier as most influential on built form (page 271) -- namely visual orientations, the river and east/west drainage/irrigation pattern, and the canyon. More detailed observations of Urrutia's map are presented in the builtscape axis of the 1768 landscape/builtscape matrix (Figure 27). As done for matrices in Chapter III, landscape/builtscape variables here are reconciled on the basis of whether a structural or conceptual connection between them exists and the same conditions as previously applied for such determination also apply here. Parallel to the builtscape variable axis is a list of terms which one can recognize as terms from the landscape linkage vocabulary. These

terms are associated with builtscape variables on the basis of conceptual or structural linkages that are revealed by the matrix -- as done in the cross-cultural test of Chapter IV.

figure 27

1768
landscape/builtscape matrix

linkage terms	landscape																	builtscape
	1. east/west dish-shaped space	2. Santa Fe river as E/W axis of space	3. east/west irrigation ditches	4. gentle sloping enclosure to south	5. break in natural definition to southwest	6. dominant visible landforms to E	7. canyon to east	8. permissible visible landforms to E/W above 4st ring landforms	9. indentation in landform to due north	10. drainage pattern west from east	11. river flow west from east	12. continuously defined natural space	13. dominant view to east	14. dominant landforms N/E	15. escarpment to NE/N/W	16. strong natural enclosure north of river	17. descending layers of landforms (sangre de cristo) into valley on east	18. arable valley soil	
gap							C	C		S							S		1. east break in plaza definition
breakdown of geometric rhythm						S	S					S		S					2. random development to SW
expression of axis					S		C	C		S	C							S	3. continuous frontage along San Francisco st.
breakdown of geometric rhythm					C						S					S	S		4. surrender to natural features on NE/E
structural profile					C					C		C							5. use of building symbols on E of plaza
channeled entrance/directed view orientation					C		C	C		C	C	C				C	C		6. confined space along San Francisco
focused view/compositional massing					C					C		C							7. use of church to terminate E direction of San Francisco
enframed gap							C			C			C			C	C		8. open penetration of San Francisco to W
reinforcement of axis					C			C		C	C	C				C	C		9. diminution of plaza to maintain frontage of San Francisco st.
reinforcement of enclosure				C	C	C	C										C		10. weakening of Palace st. to W
empty(open) ground surface			C			C												C	11. openness of plaza space
continuous edge/bounded space/central focus			C			C												C	12. continuous definition of plaza
directed visual orientation					C		C	C		C		C				C	C		13. views directed east/west
physical internalization of drainage							S	S			S					S	S	S	14. east/west configuration of development
selective placement of mass/height				C								C							15. larger buildings to north/east
visual containment			C	C						C						C		C	16. views contained N/S
expression of direction					C		C	C		C	C	C				C	C	C	17. E/W alignment of San Francisco & Palace st.
breakdown of geometric rhythm	S												S	S	S				18. growth to southwest
breakdown of geometric rhythm							S	S		C		C		S	S	S	S		19. development S of river in organic E/W patterns
condensing pattern			C						C										20. stronger plan geometry toward north
extension of direction		C				C		C			C	C	C			C	C		21. penetration of palace to E

THE TEMPORAL CONTINUITY TEST

The 1768 landscape/builtscape matrix identifies a set of built features which can be recognized from Urrutia's pictorial map and associated with characteristics of Santa Fe's natural setting. The landscape/builtscape matrix also demonstrates that these built features express the same kind of landscape linkages as seen in the cross-cultural test of Chapter IV. Therefore, the results of this 1768 matrix are consistent with the results of previous landscape/builtscape matrices. Consequently data used for temporal continuity testing are comparable with that used for cross-cultural testing. It is important to note that the temporal continuity test is exercised on data of the same type as employed in the cross-cultural test. Therefore, the temporal continuity test is not testing results of the cross-cultural test but the same input data. In this way, the results of these two tests are comparable and should reinforce each other.

1768 built features and the landscape linkages they express become subjects of the temporal continuity test illustrated in Figure 28A. In this test, the strengthening or weakening of these built features will be assessed at each of the

chronological points between 1768 and 1930 (1768, 1847, 1883, 1893, 1913, 1930). As described earlier, these chronological points correspond with changing phases in Santa Fe history and available data sufficient for reconstruction of former physical settings.

Inasmuch as one of the products of this thesis is to address landscape relationships as an alternative structural theme for preservation/conservation efforts, the temporal continuity test also assesses the stability of Santa Fe architectural appearance. Architectural style characteristics selected for testing are based upon the following:

A. Architectural regulations of the Santa Fe Historic District (includes the test site) which represent a publically mandated set of stylistic features. [1]

B. An attitudinal survey of Santa Fe residents intended to document popular perception of the "Santa Fe" aesthetic. [2]

Together, the above two sources identify a set of stylistic qualities generally concerning materials, height, texture, details, color, signage, building shape and interior courtyards. From Urrutia's map, written accounts of early Santa Fe, and the

---

1. Santa Fe City Planning Commission, Zoning and Related Ordinances, Santa Fe, 1971, Part II.
2. Church, Gordon M., The Aesthetic Urban Landscape: Attitudes Toward Structural Surfaces in the City, Master's Thesis in Department of Geography, Lincoln, University of Nebraska, 1973, p. 49.

work of New Mexico architectural historians like Bainbridge Bunting [1], one can determine, with reasonable accuracy, which of the stylistic features expressed above were visible in the built fabric of 1768. These stylistic features are summarized by variables 23 through 39 in the temporal continuity test matrix (Figure 28A). It appears that Santa Fe of 1768 would today be considered in exemplary compliance with the Historic District Ordinance.

Consistent with previous analysis formats, the temporal continuity test is constructed around a matrix as seen in Figure 28A. Along the horizontal axis of this matrix are listed both stylistic qualities of 1768 Santa Fe (variables 23-39) and built features defined as landscape linkages (variables 1 - 23). Variable 23 is a member of both data sets as it is identified in both the 1768 landscape/builtscape matrix and Gordon Church's attitudinal survey. Along the vertical axis of this matrix are listed those chronological points presented earlier (page 265). The process of the temporal continuity test is to use maps, photographs, documents and other data previously described; to make judgments, at individual chronological points, regarding the stability of each of the

---

1. Bunting, Bainbridge, Early Architecture in New Mexico Albuquerque, University of New Mexico Press, 1976

39 stylistic and builtscape variables. Stability is expressed in terms of whether the variable, by its presence or influence, is noticably stronger, weaker or unchanged. To make these judgements visible, a graphic device has been employed. In instances where a variable has been determined as weakening, a negative sign is noted within a star and recorded in the appropriate matrix cell. Conversely, when a variable has been judged as strengthening, a positive sign is placed within a star. In cases of no discernable change, no stars are recorded. Viewed collectively, the six notations for any one variable display its tendency to strengthen, weaken or remain stable over time. Thus some variables can be viewed as continually strengthening, continually weakening, oscillating between the two within a range of stability or as showing no change at all. If the change tendency of individual variables can be ascertained in this way, then the change tendency of variables relative to each other can also be determined. Relative change is discussed later with regard to the scale of relative stability (Figure 28B).

By examining the 1846 and 1883 columns of the temporal continuity matrix, one can see that there was a sudden decrease in many of the stylistic variables (23-39) while builtscape variables

(1-23) remained unchanged or strengthened in their influence. Although the Santa Fe trail opened in 1821, making the city a key point in U.S. trade relations with Mexico, its 1846 architectural appearance was still very much like that of 1768. In fact, architectural appearances are strengthened between 1768 and 1846 (as noted in the matrix) as a result of growth and subsequent development in the traditional manner. Bainbridge Bunting makes this observation:

> "Administrative and economic changes were instituted soon after annexation. [...] Technological innovations were not long in appearing and soon Santa Fe trail merchants were supplying the local market with new essentials -- window glass, nails and metal hardware. Despite these innovations, the architecture of the territory did not change much before the outbreak of the Civil War. 1

Bunting's observation is reinforced by historian Paul Horgan who quotes a U.S. Army Lieutenant of the time (1846) who characterizes Santa Fe as "a very extensive brick yard indeed." [2]

By 1883 the situation is quite different, as the continuity matrix illustrates. There results a unilateral weakening of those stylistic qualities associated with Santa Fe of 1768 and 1846. Santa Fe of 1883 is the product of 35 years of commercial prominence in a booming U.S. frontier. The first New Mexico saw

---

1. Bunting, Bainbridge, Early Architecture in New Mexico, Albuquerque, University of New Mexico Press, 1976, p. 5.
2. Horgan, Paul, The Centuries of Santa Fe, Santa Fe, William Gannon Publishers, 1976, p. 200.

figure 28

	1768	1846	1883	1898	1913	1930
1. random development to southwest	☆	☆	☆	☆	☆	☆
2. development S of river in organic E/W patterns	☆	☆	☆	☆	☆	☆
3. growth to southwest	☆	☆	☆	☆	☆	☆
4. surrender to natural features on NE and E	☆	☆	☆	☆	☆	☆
5. E/W configuration of development	☆	☆	☆	☆	☆	☆
6. stronger plan geometry to North	☆	☆	☆		☆	
7. larger buildings to north and east	☆	☆	☆			☆
8. penetration of Palace st. to east	☆	☆	☆			
9. E/W alignment of San Francisco and Palace sts.	☆	☆	☆			
10. building symbols on east of plaza	☆		☆			☆
11. views directed east and west	☆	☆	☆			
12. continuous definition of plaza	☆	☆	☆			
13. openness of plaza space	☆	☆	☆	☆		
14. small streets	☆	☆	☆	☆	☆	
15. church terminates San Francisco to east	☆	☆				
16. open penetration of San Francisco to west	☆	☆				
17. weakening of Palace to west	☆	☆				
18. diminution of plaza to maintain frontage on San Francisco street	☆	☆				
19. views contained north and south	☆	☆				
20. confined space along San Francisco street	☆	☆			☆	
21. continuous frontage along San Francisco street	☆	☆			☆	
22. east break in plaza definition	☆	☆				
23. irregular street pattern	☆	☆	☆	☆	☆	
24. horizontal building expression	☆	☆	☆	☆	☆	
25. 1 or 2 story building height	☆	☆	☆	☆	☆	☆
26. flat roof	☆	☆	☆	☆	☆	☆
27. flat cornice	☆	☆	☆	☆	☆	☆
28. sheer façade (flush except vigas)	☆	☆	☆	☆	☆	☆
29. natural earth color	☆	☆	☆	☆	☆	☆
30. small openings	☆	☆	☆	☆	☆	☆
31. irregular building lines	☆	☆	☆	☆	☆	☆
32. blank walls	☆	☆	☆	☆	☆	☆
33. smooth texture (adobe texture)	☆	☆	☆	☆	☆	☆
34. deep window recess	☆	☆	☆	☆	☆	☆
35. adobe materials	☆	☆	☆	☆	☆	☆
36. portals	☆	☆	☆	☆	☆	☆
37. subordinate signage	☆	☆	☆	☆	☆	☆
38. absence of right-of-way clutter	☆	☆	☆	☆	☆	☆
39. interior courtyards	☆	☆	☆	☆	☆	☆
	1768	1846	1883	1898	1913	1930

← chronological points

structural builtscape variables

conceptual builtscape variables

stylistic variables

instability ↔ stabilizing

instability

scale of relative stability

B

temporal continuity matrix

A

mill opened in Santa Fe by 1848, making possible new and more "American" architectural embellishments. However, the train was most significant in its impact, bringing to Santa Fe's emporia all manner of goods and services. Bunting describes the extent of this intrusion:

> "Of particular interest is how thoroughly this flood of goods revolutionized the technology of the region and in turn radically effected the architecture [...] The architectural counterpart of these changes was a striking departure from the conservative Spanish-Pueblo tradition so long unchallenged in the region." 1

Again Paul Horgan reinforces Bunting's observations"

> "The city was changing, it must be observed. Bandlier had gone to Mexico in 1881, and upon his return (to Santa Fe) in 1882 he could see differences in even so brief a time [...] amid all the low flat adobe structures that had prevailed for centuries, those new buildings in the 'territorial' style were conspicuous. 2

The most dramatic contrast between architectural appearances of 1846 and 1883 is illustrated by Figures 29 and 30.

Figure 29 is a hand-colored lithograph from 1846 and the characteristics of Santa Fe most clearly visible are:

A. a dispersed fabric of low, box-like adobe structures.

B. a great many of the visible structures have traditional inner courtyards.

C. people are dressed in a fashion characteristic of a Mexican/Indian pesantry.

D. visible landscaping is random native vegetation

---

1. Bunting, Bainbridge, Early Architecture in New Mexico, Albuquerque, University of New Mexico Press, 1976, p. 88.
2. Horgan, Paul, The Centuries of Santa Fe, Santa Fe, William Gannon Publishers, 1976, p. 286.

indigenous to the area.

E. in the "Spanish-pueblo" tradition, buildings are simple adobe, with small openings, and devoid of embellishment.

F. there is a pervasive uniformity of scale.

(Note: the smoke from houses, indicating home cooking fires)

Figure 30 is a bird's eye view of Santa Fe in 1882. In striking contrast to Figure 29, its most apparent features are:

A. a much denser fabric of larger and more complex structures.

B. a great many of the visible structures orient towards the street and collectively form an urban street frontage.

C. people are portrayed as riding in closed, horse-drawn carriages.

D. visible landscape is consciously arranged in lines of shade trees.

E. in a European tradition, buildings display mansard roofs, and numerous ornamented openings. There is a conscious effort to negate an adobe appearance by sharpening building edges and straightening building lines.

F. there is a wide variety of scale and building type; church spires create a skyline absent in Figure 29.

(Note: instead of smoke from home cooking fires, the smoke shown in Figure 30 is from factories)

1846 lithograph of Santa Fe

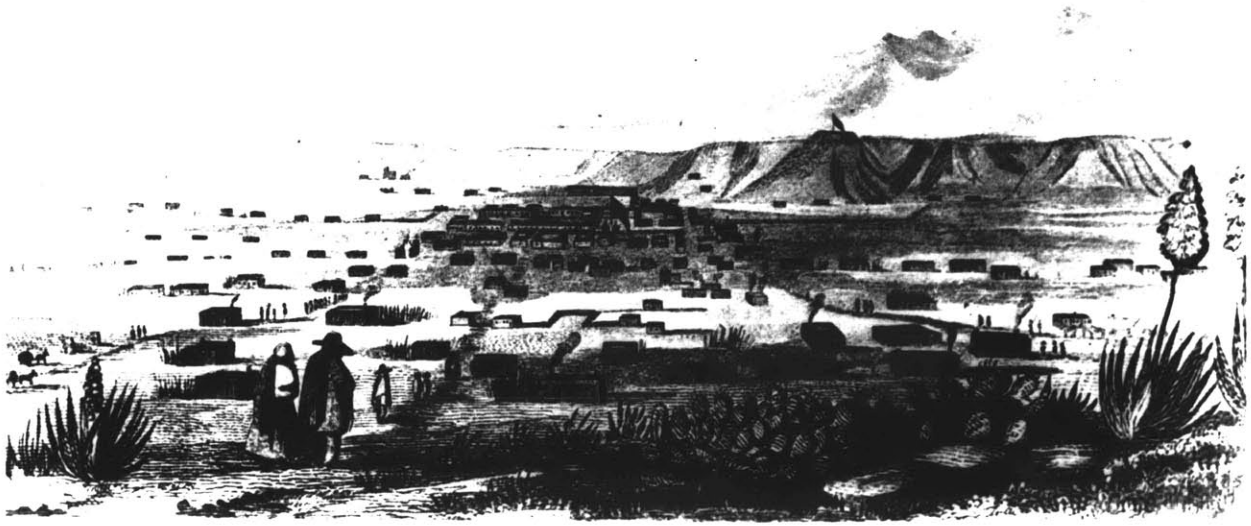


figure 29 (collections in the Museum of New Mexico)

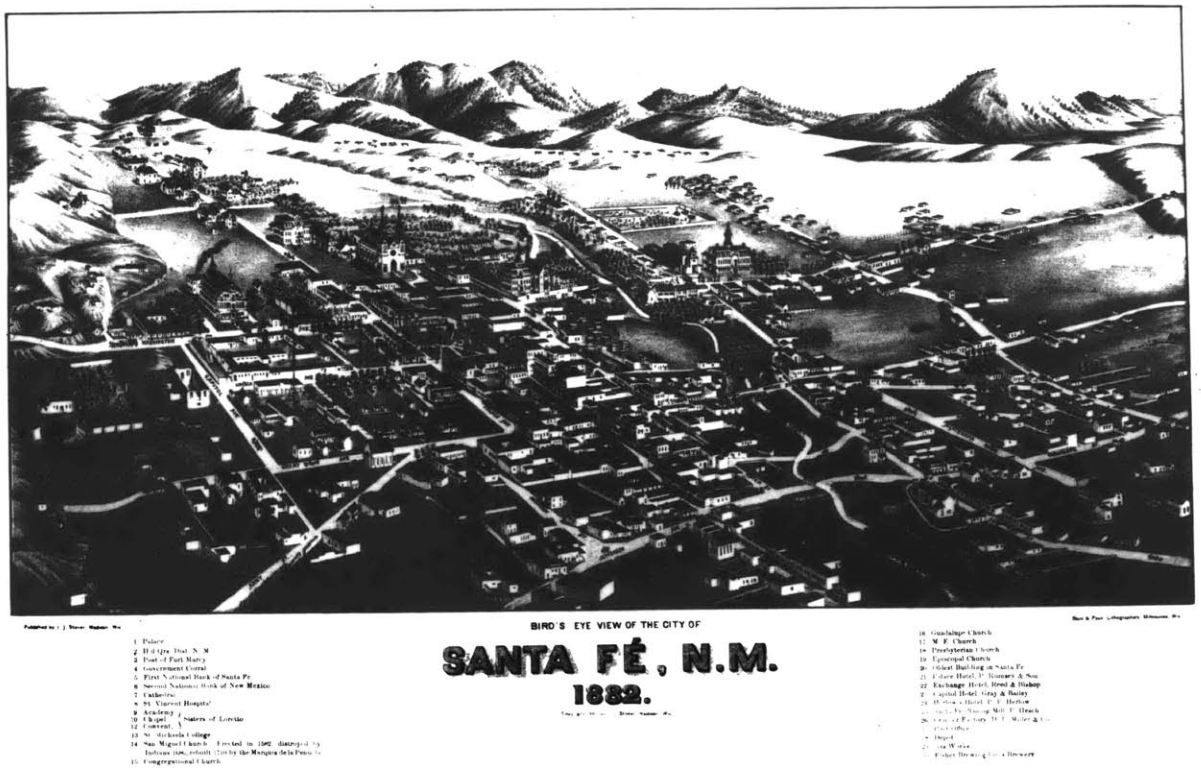


figure 30

(collections in the Museum of New Mexico)

These same kinds of stylistic changes are noticed in Figure 31 and 32 (1878 and 1925 respectively),but there is also an obvious similarity between them even though all the buildings are different. These similarities include:

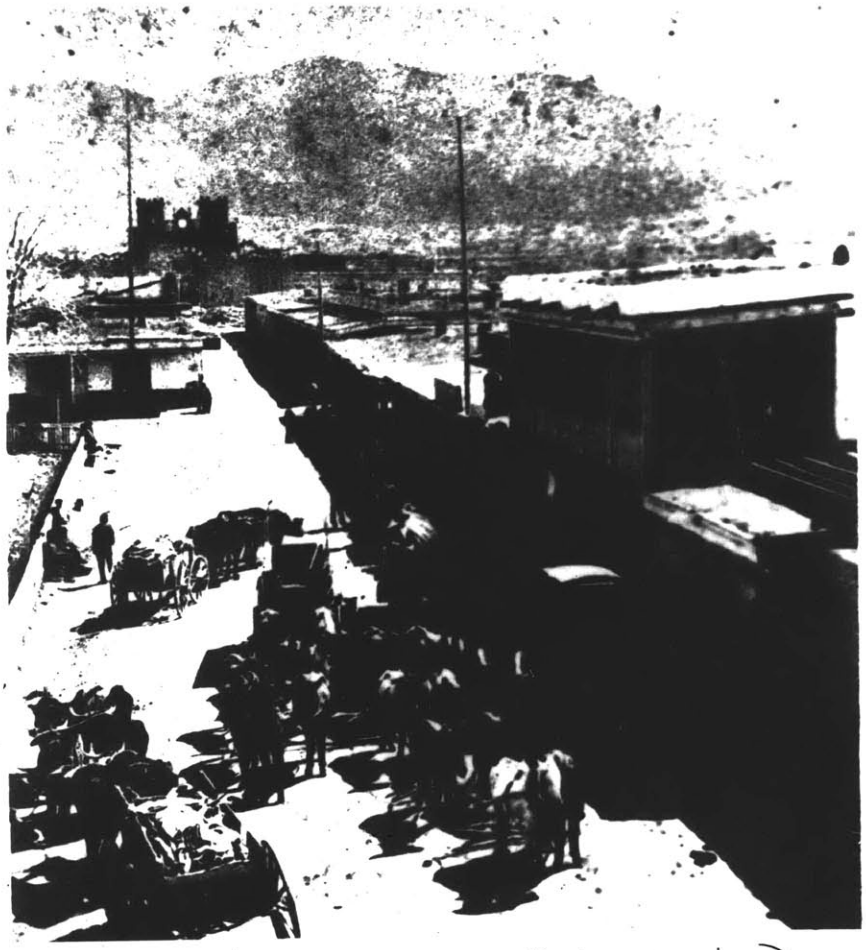
A. Continuous frontage of San Francisco Street apparent in Figure 31 and clearly visible in Urrutia's 1768 pictorial map, is even underscored in Figure 32 (1925) by a parallel line of trees. This frontage as illustrated on the 1768 landscape/builtscape matrix is landscape associated. As discussed earlier, in reference to Urrutia's map, this represents further weakening of the plaza to reinforce San Francisco Street frontage.

B. The double-spired church visible in Figure 31 terminates San Francisco to the east and symmetrically aligns with a cleft in mountains behind. This same church/street/hill relationship is clearly seen in Urrutia's 1768 map (also a double-spired church);and again in the 1768 landscape/builtscape matrix,it is landscape associated. In Figure 32 , an entirely new church now terminates San Francisco Street and even though designed and built by imported French architects/craftsmen, it embodies the above relationship.

C. The symmetrical relationship between San Francisco Street and the church, seen in Figure 31 , is maintained

figure 31

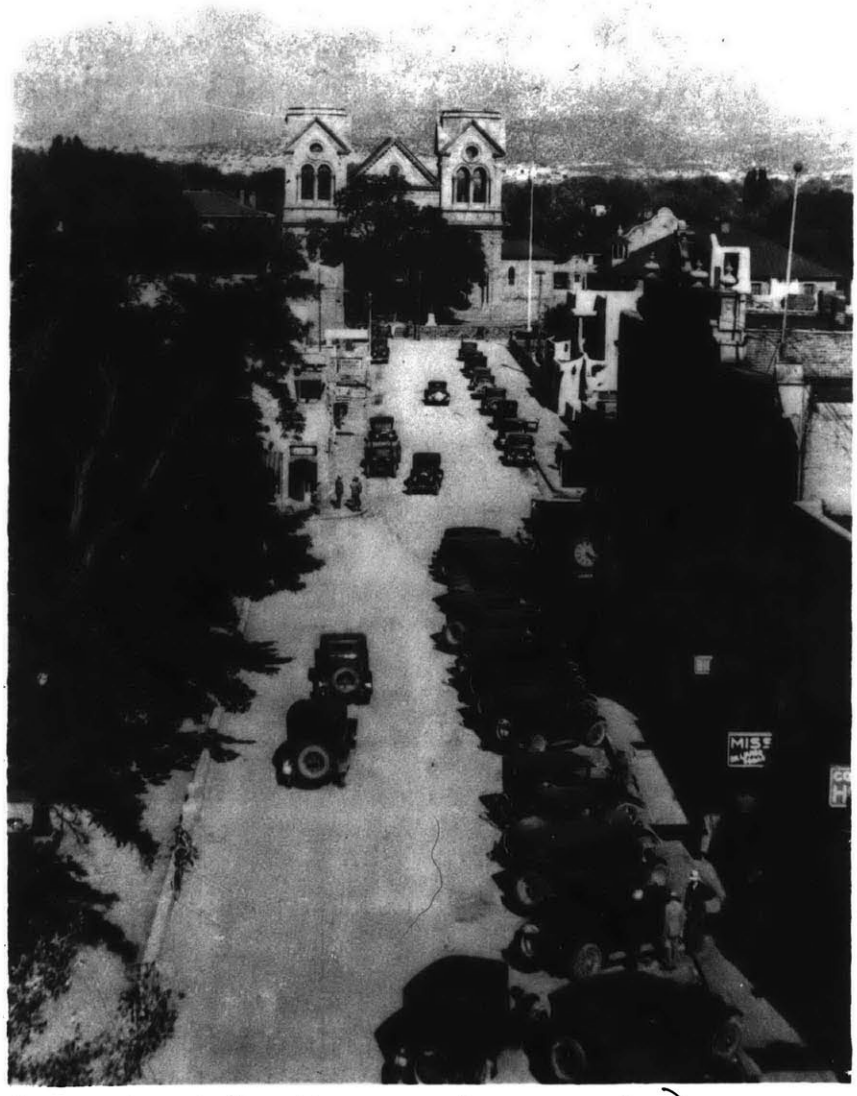
San Francisco street - 1878



(collections in the Museum of New Mexico)

figure 32

San Francisco Street- 1925



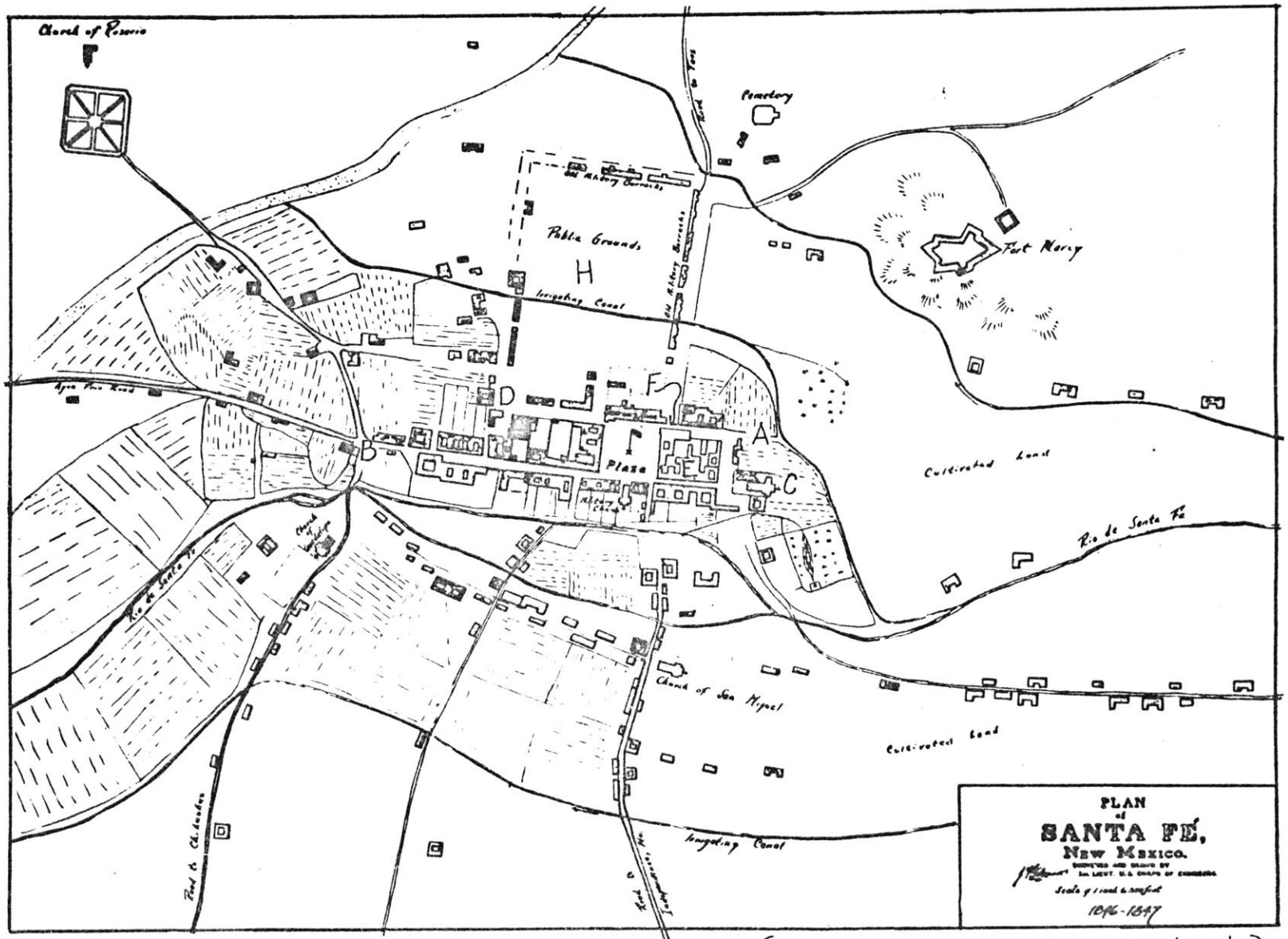
(collections in the Museum of New Mexico)

in Figure 32 in that street right-of-way has been widened in order to accomodate a church of larger scale.

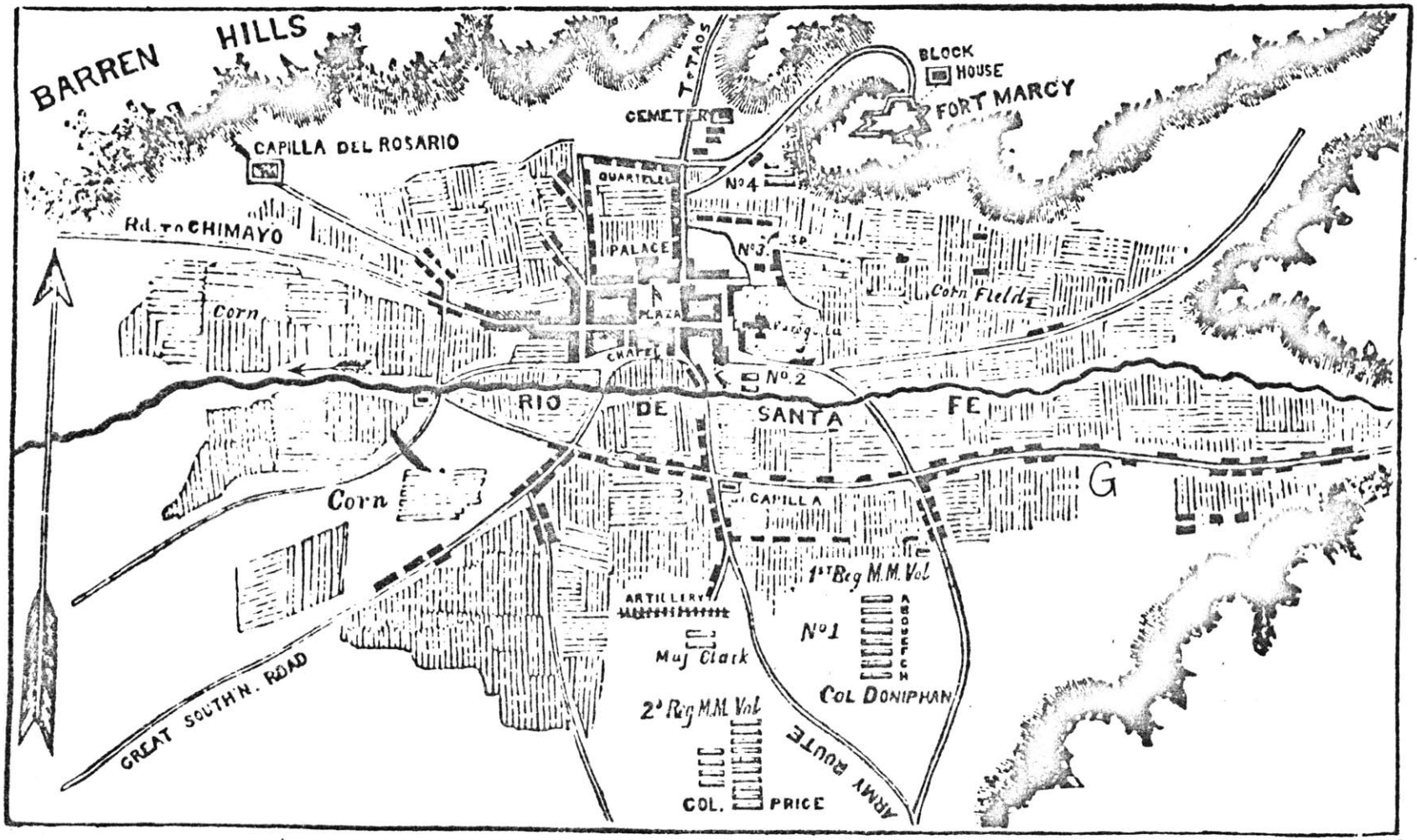
Parallel to these observations and in contrast to stylistic trends, builtscape variables of the temporal continuity matrix are clearly stabilizing or increasing in strength between 1768 and 1883. Nuances of urban structure identified in Urrutia's map and landscape associated in the 1768 landscape/builtscape matrix are much more clearly articulated in both J.F. Gilmer's map of 1847 (Figure33) and W.H. Emory's map of 1846 (Figure 34) Here San Francisco and Palace Streets are both strongly defined and the closure of other plaza exits reinforces the east/west penetration of plaza space that was only suggested in 1768. In Figure 33, one can see that Palace Street clearly extends eastward (Gilmer map. point A), reinforced by continuous frontage, and to the west it is unequivocably terminated (Gilmer map,point D) In 1768 this westward termination was less strongly expressed by encroachment upon street right-of-way. San Francisco Street has also been reinforced in its considerable westward extension (Gilmer map, point B) by strong frontage definition and it remains terminated east by the church (Gilmer map,point C). Axial relationship to the church has also been reinforced by additional frontage along San Francisco's northern edge (east of plaza)

(Gilmer map point E) -- a feature expressed in Urrutia's map by those buildings which bisected the originally rectangular plaza space. However, these buildings of 1768 articulated a wide opening in the plaza's eastern edge which has by 1847 been squeezed to a narrow gap (Gilmer map point F). Thus, unlike other builtscape variables, number 22 is shown as weakening in 1846 instead of strengthening. Beyond this initial alteration, variable 22 remains unchanged throughout the test. Finally, the east/west configuration of development seen in 1768 is still evident and reinforced by growth along the river and irrigation ditches (Emory map, point G). An interesting feature of Gilmer's map is an emerging geometry (point H) north of the plaza which ultimately fills the previously described indentation in natural definition. South of the river, along gentle slopes, the organic lineality of Barrio de Analco is considerably extended in 1846 (W.H. Emory map, point G).

These observations generally identify what is broken down to more specific detail on the temporal continuity matrix. However, they serve to generalize what ultimately emerges as the observed tendencies of stylistic and builtscape variables throughout the test. Namely that stylistic variables (23-39) continue to diminish until 1930 and that builtscape variable (1-23) continue to strengthen or stabelize until 1930. The only exception



Gilmer Map figure 33 (courtesy Santa Fe Planning Dept.)



PLAN OF SANTA FÉ AND ITS ENVIRONS

Emory map - 1846 figure 34 (courtesy Santa Fe planning Dept.)

to the stylistic trend is variable number 14 (small streets). In summarizing its chronological assessments one can see that its overall stability is expressed by three positive stars (increasing presence), two negative stars (decreasing presence), and one instance of no discernible change. The profile of change as reflected by this distribution means that small streets are a stable aspect of the built environment. It falls in the general middle, between positive and negative extremes (from six positive stars to five negative stars) as shown in the temporal continuity matrix (Figure 28A). Therefore, the overall assessment of variable 14 implies a general stability relative to other variables. This is to be expected with regard to small streets as the scale of Santa Fe remains small with buildings infrequently exceeding three stories. Also many of Santa Fe's important streets were built over trails -- those same trails designated by the 1912 City Plan Commission as "ancient streets to be left undisturbed." [1]

The general observable trend of builtscape variables is to strengthen until 1883, after which (as seen in the 1913 and 1930 columns) most of them continue with no discernible change. The major exceptions to this rule are variables 1,2,3 which describe growth patterns.

---

1. Planning Department, Santa Fe, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, 1977,p. 3.

The impact of statehood in 1912 was to reverse a declining population trend which had existed since 1880. By 1913 population had noticeably increased (5,500) and continued to do so in 1930 (11,176) and presently exceeds 40,000. The development pattern precipitated by population growth is described by Harland Bartholomew:

> "Residential development has been influenced by topography, the River and acequias [...] Residences have been built east and west along the Santa Fe River because of the great importance of water. Development has extended all the way along Agua Fria, parallel to the river to the west, because of the early importance of the street as the Camino Real [...] The 1930 population of 11, 176 was confined to a small compact area with some extended development east and west along Canyon Road and Agua Fria. 1

Therefore, trends of growth (pattern) would continue to be manifest in an area of population increase -- post 1913. Also, it is interesting to note that builtscape variables 1,2,3 are primarily structural landscape responses.

---

1. Bartholomew, Harland and Associates, Comprehensive City Plan, Santa Fe, City Planning Commission, 1947, p. 20.

THE SCALE OF RELATIVE STABILITY

As previously described, the tendency of an individual builtscape or stylistic variable to strengthen, weaken, or remain stable over time can be judged by observing its respective distribution of symbol notations for each of the six chronological points. To graphically illustrate the significance of this, variables listed on the horizontal axis of the temporal continuity matrix (Figure 28A) are arranged in an order which reflects the changability of each variable relative to the others. We call this the scale of relative stability (Figure 28B). The scale is ordered from both ends toward the center. Those variables which are"positively biased" (the majority of its notations are positive) fall left of center and variables which are "negatively biased" (the majority of notations are negative) fall right of center. To the extreme left are those variables noted as strengthening at each of the six chronological points (six positive stars). Next are those which strengthen at five chronological points, then those which strengthen at five and weaken at one and so on until the bias becomes negative. Negatively biased variables mirror image the above described order (number of negative notations increases away from center) with those variables receiving the most negative notations at the extreme right. The result is a spectrum of variables. Those which continually weaken fall at the negative right end and those which continually strengthen fall at the other,positive end. The largest number of variables fall into some middle ground which we call the"stable band." Extremes of the scale identify two dimensions of instability First a fading instability as seen by a continual weakening and second

an expanding instability as seen by a continual strengthening.

The generalized tendencies of builtscape and stylistic variables, as described earlier, are clearly seen in the scale (Figure 28B). That is, the successive weakening of stylistic variables has resulted in the distribution of such variables about the negative pole. Conversely, the successive strengthening, or stabilizing of builtscape variables is seen in distribution of such variables about the positive pole. However, as described earlier, builtscape variables can be grouped according to their predominantly structural or conceptual landscape connections. Builtscape variables associated with structural connections in the 1768 landscape/builtscape matrix are also variables which cluster about the extreme positive end of the stability scale. As previously noted, this extreme positive pole represents one of the two dimensions of instability -- expanding instability. Similarly, those builtscape variables associated with conceptual landscape connections, occupy the middle band which was earlier labeled the "stable band." Finally, stylistic variables primarily group about the negative extreme which is associated with the second dimension of instability -- fading instability.

In Chapter IV, a major consequence of the cross-cultural matrix was the failure of structural landscape linkages to "carry" cross culturally. Thus the same builtscape variables which failed to pass the cross-cultural test also fail to be associated with stability over time, as revealed in a distribution

of structurally associated built features about the positive extreme of the scale. However, the generally conceptual variables which did "carry" cross-culturally in Chapter IV are also seen here as constituting the scale's middle (stable) range. Thus it appears that the two tests reinforce each other by identifying a common set of built features and associated landscape linkages. That is, landscape linkages which are both culturally and temporally independent.

As originally hypothesized, those variables describing architectural style also failed to be associated with stability over time. Thus, it seems that decisions made on the basis of style are decisions which interrupt the dynamics of change, whereas decisions based on recognition of conceptual landscape linkages would be responsive to the dynamics of change. This will be discussed in more detail in the thesis conclusion.

The purpose of this chapter has been to illustrate that the landscape linkage vocabulary presented at the end of Chapter IV is reinforced by the temporal continuity test. Inasmuch as the stability scale clearly reveals such reinforcement, it seems that both our landscape relationship hypothesis and its associated landscape linkages meet the two conditions of continuity as originally defined in the methodological framework.

In addition, a survey of present day Santa Fe (1977) was undertaken to substantiate applicability of the scale since 1930. As we expected, enforcement of stylistic preference via an Historic Distric Ordinance (appendix page 359) has affected clustering of stylistic variables about the negative pole of the stability scale. On the other hand, relative positions of builtscape variables remain unchanged.

In addition to continuity, another methodological test was originally prescribed -- the differentiation test. While, at this point, a separate test for differentiation has not been conducted, we feel that it certainly has been tested in the course of previous chapters. The continuity test has not only revealed that a vocabulary of landscape linkages is both culturally and temporally independent but, equally important that sixteen separate test sites can be described using the same terms and same landscape rationale.

The next chapter discusses this landscape vocabulary and landscape rationale as it can be applied to Whiterock -- a post World War II (1960) development. In making this application, Chapter VI addresses the issue of differentiation. Thus our testing for differentiation is not centered about a matrix analysis but a commentary, a discussion, which attempts to describe an alien setting (alien to previous examples) in terms previously

established. To some extent, our survey of present day Santa Fe has already done this,but Whiterock serves as an individual site used for this particular purpose.

Note: As another field check of temporal continuity, we surveyed two ancient Pueblo ruins (Puye and Tyuonyi) and, from both physical remains as well as graphic reconstruction, endeavored to describe them using the landscape linkage vocabulary. These field surveys are presented in the appendix page 363).

CHAPTER VI

THE DIFFERENTIATION TEST

Thus far we have developed a rudimentary vocabulary of landscape linkages and tested it under the conditions of continuity. However, it remains to test the vocabulary under the conditions of differentiation. Our understanding of differentiation, as presented earlier (introduction) suggests that landscape linkages which identify continuity must also identify qualities of the settlement which distinguish it from other settlements. That is, the linkages must be able to describe a place in terms of its own inherent characteristics and not in terms of its conformance to a larger ideal (the latter being a stylistic approach). Yet, to make these distinctions comprehensible, they must be presented in terms relevant to the larger set of environments, from which this one is being distinguished. Hence, there exists the earlier described propensity to develop typologies or document recurring and repeating qualities -- a reality which we accept as part of our methodology.

The landscape linkage vocabulary represents a set of terms which are relevant to a large set of environments. They are relevant to all environments in the study area in that they identify cross-cultural articulations of space and built form. In the introduction we stated that the language of difference would be the language of things that varied among human settlements

and these certainly include qualities of the built environment. Further, the landscape linkage vocabulary was formulated on the basis of recurring and repeating qualities among 16 different test sites. However, these recurring and repeating qualities are not the lowest common denominator of some settlement typology but a summarization of parallels between the built and natural environment. In this way, comprehension of a test site is based on an understanding of some underlying function responsible for its appearance -- instead of just trying to catalogue the artifacts which constitute that appearance. Therefore, 16 sites which represent differences in culture, physical appearance, physical form, location, and periods of history were described in terms of those built features which remain stable over time and across culture. Distinctive characteristics of each test site are expressed by the syntax of landscape linkages observable in its built fabric. Thus while our methodology and dialogue has served the purpose of formulating a structural theme which fulfills the objectives of continuity; we have, in so doing, dealt with differentiations.

SITE SELECTION

As suggested above, we have indirectly dealt with differentiation,but site selection for previous continuity tests has not been guided by criteria relevant to the discussion of difference; but continuity. Thus, there has not been a conscious attempt to select a site on the basis of difference and to deal with difference as the major feature of analysis. However, previous indirect dealing with differentiation does set out some framework for a differentiation test. Specifically, testing of the landscape linkage vocabulary relative to the conditions of differentiation would mean application of the vocabulary in describing a settlement which is significantly different from other settlements employed thus far. Therefore, criteria for the selection of a test site are derived from a recognition of some fundamental attributes of previously selected settlements. Sites selected for continuity testing were associated with an Indian or Hispanic identity (although Santa Fe represents the confluence of these with an Anglo culture). Also, continuity test sites have long histories of settlement -- having been established in the 16th, 17th or 18th century. Further, these sites are characterized by adobe construction which results in some commonalities of appearances despite different styles or settlement form (although Santa

Fe represents a transition from adobe to late 19th century eclecticism). Finally, continuity test sites are organized around a pedestrian scale of movement within the settlement rather than the automobile. As a result, criteria for selection of a settlement suitable for differentiation testing are:

A. Difference in cultural identity

B. Difference in a period of history represented

C. Difference in appearance

D. Difference in scale of movement accomodated by settlement.

On the basis of these criteria, the 20 settlements earlier selected, having physical attributes suitable for field research can be culled to one remaining community -- Whiterock. Whiterock is a post World War II settlement, built in the late 1950's/early 1960's and incorporated in 1961. While some of Whiterock's residents work in its commercial center, the large majority commute to Los Alamos Scientific Laboratory (some to Santa Fe). As a result, the community has been constructed to accomodate both the movement and storage of private automobiles. As typical of most 20th century subdivision development (in the United States), the automobile's ultimate impact has been a compartmentalization and specialization of the settlement fabric and a resulting specialization of social roles. The social pattern supported by Whiterock's subdivision form and the attitudes toward land and spatial organization it reflects (discussed in reference framework) are undeniably Anglo.

Also typical of subdivision developments, Whiterock's structural appearance embodies the visual attributes associated with mass production, low per unit cost, and embellishment of a basic commodity to suit market tastes (as seen in landscaping and building ornament). Its fabric is a familiar repetition of "ranch style" subdivision homes which has its counterpart in the "post war" growth of every American city.

While Whiterock meets the previous criteria for differenatiation testing, its uniqueness entails some inherent weaknesses which must be considered in evaluating test results -- these are:

A. The employment base of Whiterock (Los Alamos Scientific Laboratory), draws to this community a homogeneous population of middle class, scientifically trained residents. Such a population represents a narrow band of the Anglo social spectrum whereas other test sites embody a full social spectrum of their respective cultures.

B. The population drawn to Whiterock as a result of Los Alamos Scientific Laboratories consists primarily of young, early to mid-career scientists with growing families. Thus, there exists a significant degree of turnover. Also, the specialized basis of employment implies that there exists a significant out-migration

of young adults born in the community but not scientifically trained. Therefore, Whiterock differs from other test sites in that it is not a place where a significant portion of the community lives out their life -- it is a transitory community.

C. Of the 45 communities within our study area, only one meets the criteria of the differentiation test. A single example makes it impossible to substantiate observations on the basis of repetition -- as done in previous testing.

D. Development decisions which collectively shape the form of Whiterock are not, to a large extent, made with reference to Anglo cultural traditions of market economics. Previous test sites are directly influenced by the religious traditions of Indians and agrarian/familial traditions of Hispanics. However, Whiterock is significantly shaped by government partnership in its development as a result of original land ownership by the Atomic Energy Commission (AEC).

While these weaknesses must be recognized, it is our feeling that Whiterock is still useful to our purpose. It is useful in that the conditions of differentiation testing are to simply describe a built environment, which is alien to previously

studied environments, by using the same landscape rationale and vocabulary formulated in continuity testing. The above weaknesses primarily affect the generalization of differentiation test results to Anglo sites other than Whiterock. However, our purpose is to test the transferability of the vocabulary, not substantiate the generalization of test results. Thus, while Whiterock is not a clearly representative sample of Anglo communities and while it is only a single example, it remains significantly alien to sites previously tested.

WHITEROCK AND THE AEC

Until 16 years ago, Whiterock was a camp for construction workers and other people with insufficient security clearance to live at the Los Alamos project site. Whiterock was also a storage area for construction materials and a general recipient of resident overflow from a housing shortage in Los Alamos, itself. The old camp, with population peaking in the late 1940's/early 1950's, was "designed for a shifting population of 2,000 to 4,500 people " [1] and was built by the Federal Government. Typical of government military projects, early Whiterock was a dense fabric of prefabricated, temporary structures(typical barracks construction). However, it was a self sufficient community complete with a shopping center, schools, post office, etc. After Los Alamos was developed, Whiterock ceased to be a necessary appendage and dwindled to a small population of only a couple of hundred.[2]

As owners of the townsite , the Atomic Energy Commission sought alternative uses for this land and consequently produced a master plan. AEC's document was a comprehensive plan for a community and identified park sites, schools sites, commercial areas, residential densities, etc. [3]

---

1. Margret Wholberg, Los Alamos Historical Museum.
2. Pat Brown, County Planner, Los Alamos County.
3. Pat Brown, County Planner, Los Alamos County.

On the basis of this plan, property was divided by AEC into 20-acre increments which were in turn sold to individual developers. However, the conditions of sale were that development would comply with the AEC's plan and that a buyer had to complete 85 percent of his increment before a second could be purchased. This suggests an intention on the part of AEC to control the speculative mechanism and perhaps to prevent disruption of Los Alamos' real estate market. As a further inducement to sale, increments were sold for $25 per acre when the market value of comparable land was much higher (several hundred dollars per acre).[1] The present unbuilt center of Whiterock's development (see field map Figure 35) is a carry over of the AEC plan,as this center area was reserved for a 20-acre high-school site, 8-acre junior high school site, and a 5-acre park site (a significant allotment of space relative to the total developable area). The schools or park were never built due to a lack of substantiated need, but the settlement's center remains open/undeveloped. In addition to the school and park sites, other center land remains unbuilt as development was initiated along the perimeter -- leaving the middle void (a significant contributer to present form which will be discussed later).

---

1. Home Planning Construction Company, Los Alamos, New Mexico.

While prefab camp buildings were demolished for construction of what residents call the "new Whiterock," the old camp still influenced the form of later development. Sewer lines designed to serve the earlier high density settlement, exceeded minimum requirements of a single-family density. Therefore, 40 percent of the previous sewer line infrastructure was incorporated into development of initial increments.[1] Inasmuch as these initial increments involved 150 plus houses, they exerted significant influence over subsequent construction as the larger sewer system and development pattern was based on that beginning. The present population of Whiterock (the incorporated town) is 6,500[2] which dramatizes the influence of the camp beginning as it was designed for a maximum population of 4,500.

The brief history outlined above suggests that Whiterock is in many ways removed from the dictates and constraints of a speculator's economic reality and that the original camp influenced the present day town site. It can certainly be said that the construction camp was not shaped by market demands -- but responsive, in an informal and incremental manner, to the conditions of Whiterock's landscape setting. It was responsive to the extent that the camp would have easily surrendered to

---

1. Home Planning Construction Company, Los Alamos, New Mexico.
2. Los Alamos/Whiterock Chamber of Commerce.

site constraints, rather than invest time or money in site alteration, thus allowing the site to manipulate settlement form. This, by virtue of the infrastructure, is definitely part of Whiterock's heritage. Further, it seems that AEC's motivations are less designed to maximize profit and more intended to provide sufficient, continuing and amenable housing for those who come to join the Los Alamos scientific community. A model of residential living, as opposed to simply a speculator's maximization of residential density is suggested by the social/life style implications of an educational/recreational center surrounded by a ring of housing clusters (see Figure 36) -- especially when that center is large (33 plus acres in a settlement of 6,500). Thus, it seems that AEC would be inclined to provide not only a functionally adequate community but to respond to the potentials of a dramatic setting. As earlier described in reference to the construction camp, the priorities of AEC are part of Whiterock's heritage by virtue of constraints transfered in property sale.

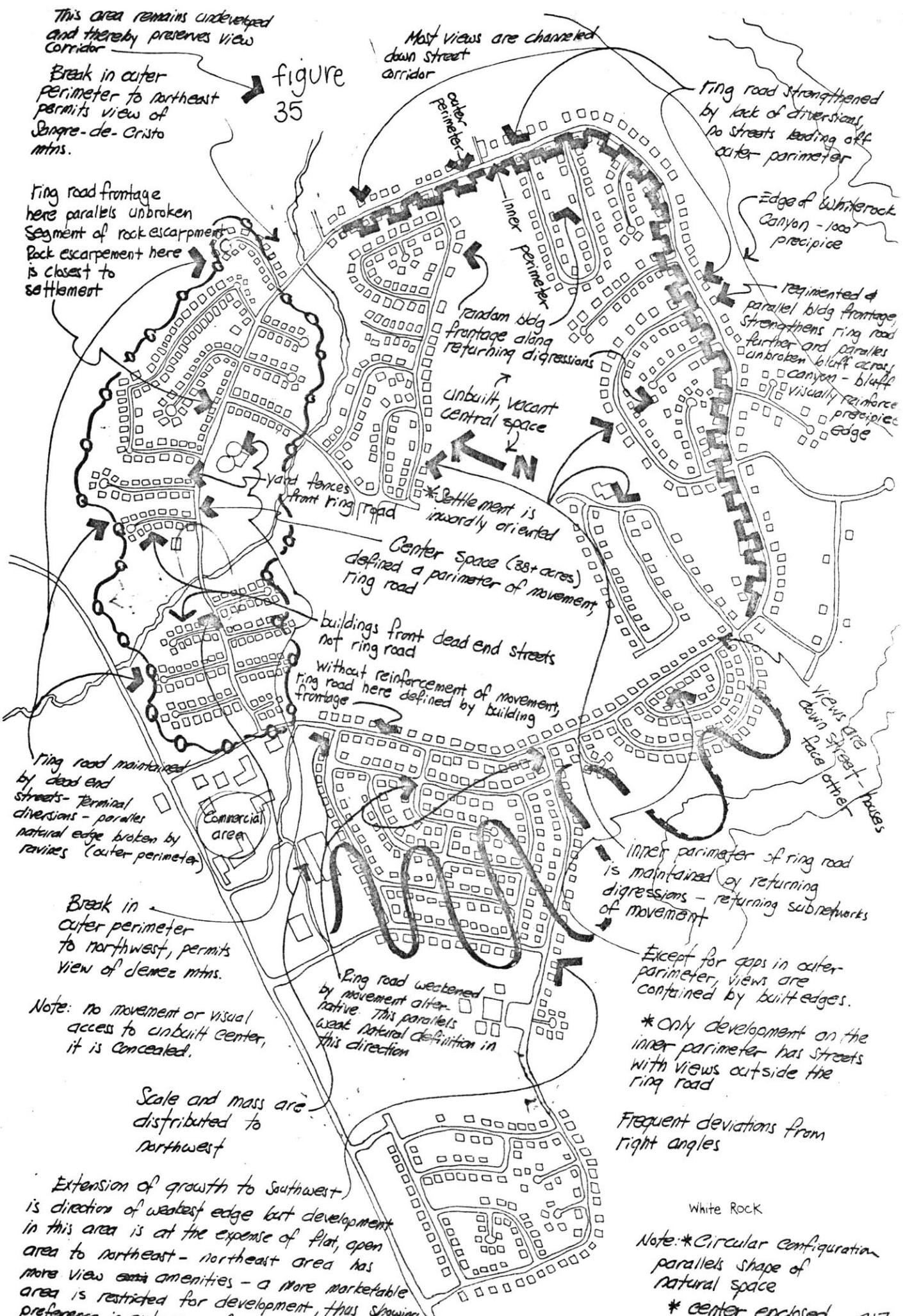
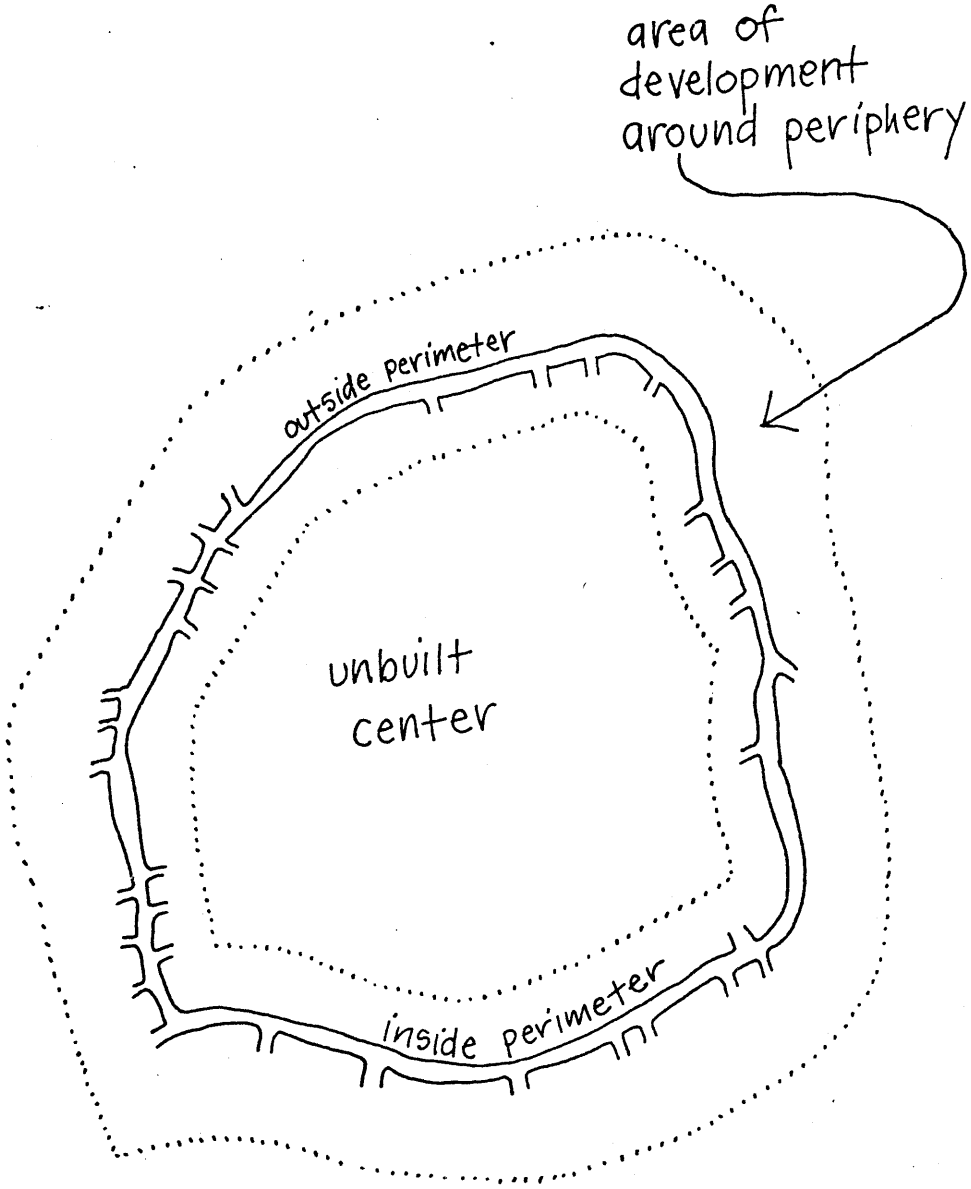

This area remains undeveloped and thereby preserves view corridor
figure 35
Break in outer perimeter to northeast permits view of Sangre-de-Cristo mtns.
Most views are channeled down street corridor
outer perimeter
ring road strengthened by lack of diversions, no streets leading off outer perimeter
Edge of Whiterock Canyon - 1000' precipice
inner perimeter
ring road frontage here parallels unbroken segment of rock escarpment. Rock escarpement here is closest to settlement
regimented & parallel bldg frontage strengthens ring road further and parallels unbroken bluff across canyon - bluff visually reinforces precipice edge
random bldg frontage along returning digressions
unbuilt, vacant central space
N
yard fences front ring road
*Settlement is inwardly oriented
Center Space (38+ acres) defined a perimeter of movement, ring road
buildings front dead end streets not ring road
Without reinforcement of movement, ring road here defined by building frontage
Views are down street - houses face other
ring road maintained by dead end streets - terminal diversions - parallels natural edge broken by ravines (outer perimeter)
Commercial area
inner perimeter of ring road is maintained by returning digressions - returning subnetworks of movement
Break in outer perimeter to northwest, permits view of Jemez mtns.
Except for gaps in outer perimeter, views are contained by built edges.
Note: no movement or visual access to unbuilt center, it is concealed.
Ring road weakened by movement alternative. This parallels weak natural definition in this direction
* only development on the inner perimeter has streets with views outside the ring road
Scale and mass are distributed to northwest
Frequent deviations from right angles
Extension of growth to southwest is direction of weakest edge but development in this area is at the expense of flat, open area to northeast - northeast area has more view amenities - a more marketable area is restricted for development, thus showing preference in extension of growth. Restriction to preserve visual release is also seen at San Ildefonso, Santa Clara,
White Rock
Note: * Circular configuration parallels shape of natural space
* center enclosed unbuilt space.

figure 36


area of development around periphery
outside perimeter
unbuilt center
inside perimeter

WHITEROCK'S LANDSCAPE SETTING

Figure 37 is a sacred circle map which describes Whiterock's natural setting and is identical to those presented in Chapter III. The key feature of this setting is that it is perched on the edge of a plateau (Pajarito Plateau) and overlooks Whiterock Canyon -- a 1000-foot gorge carved by the Rio Grande. Thus the canyon's rim (clearly articulated in the basaltic rock of this plateau) bounds the enclosure of Whiterock's site to the northeast/east/southeast. However, the crispness with which the Rio Grande has cut Whiterock Canyon means that there is no geologic forewarning or indication of its presence. As a result, the gorge remains imperceivable until one is at its very edge. On the opposite canyon wall exists a large, unbroken and horizontally massed bluff which provides a visual counter balance to the visually weak but physically influential rim. Thus there is a strong visual and physical bounding of the site along its northeast/east/southeast edge. To the north and west, Whiterock's site is further bounded by a large and abrupt escarpment, consisting of rock and volcanic tuft. Due to the close proximity of this landform, it becomes the visually dominant site feature. Also, due to the softness of volcanic tuft, this escarpment is considerably broken by eroded ravines and other agents of mass wasting. Extending from

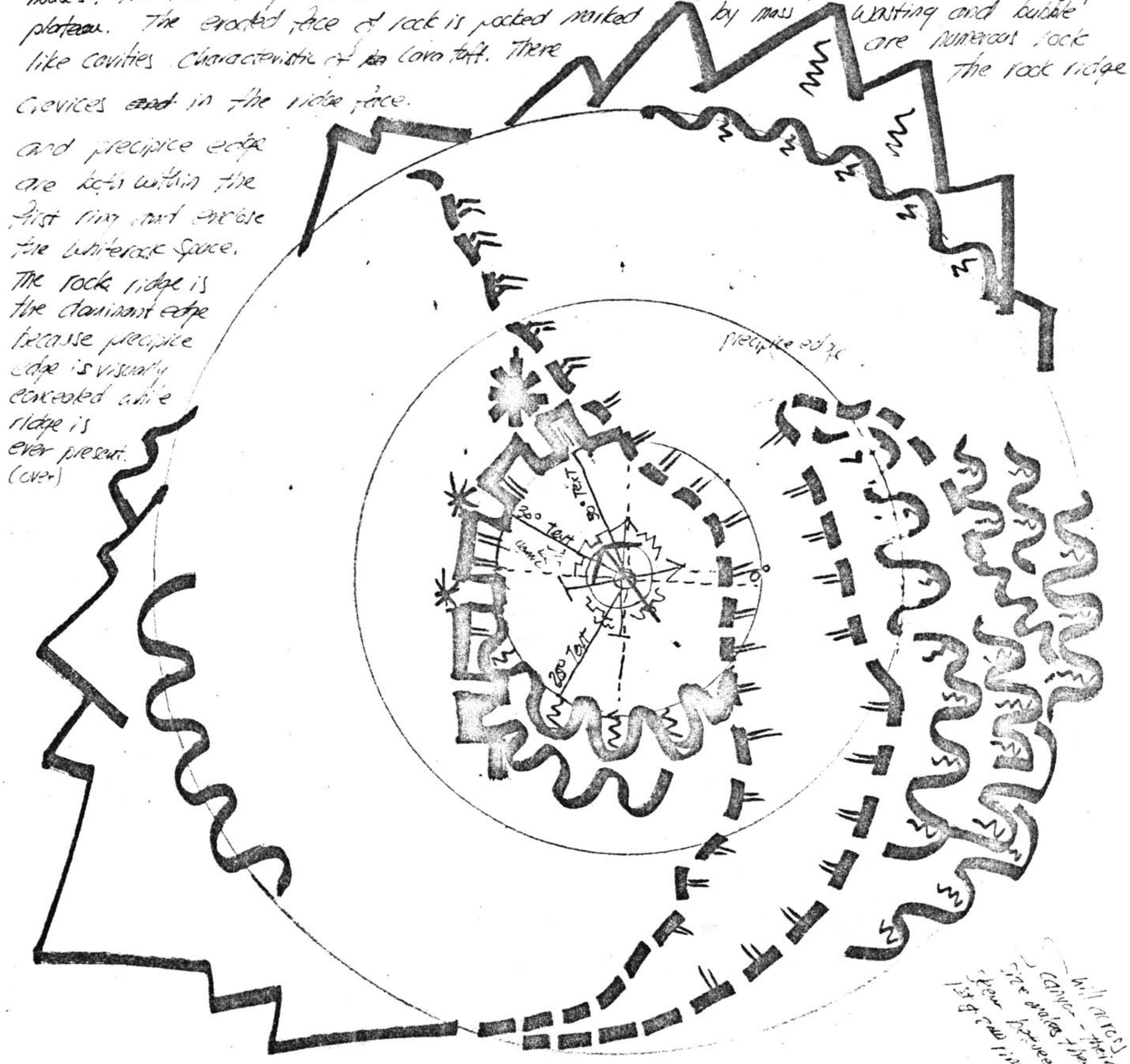
west to south, the site is visually defined by a long and relatively steep incline which extends up and away from Whiterock. The result of these land configurations is a natural enclosure in which Whiterock is centered. As shown on the sacred circle diagram, these enclosing landforms occur along and within the first ring (well within Anglo scale of consciousness -- Chapter II).

The enclosed space is circular in shape and, for the most part, views are contained by defining landforms. However, to the northeast, a visual gap exists between termination of the escarpment (west canyon wall) and beginning of the bluff (east canyon wall). Through this gap is an enframed view of the distant Sangre-de-Cristo mountains and Rio Grande valley. Similarly, to the northwest, a wide break in the escarpment (through which the road enters) permits an enframed view of the Jemez mountains. These views are enhanced by the elevated setting of this plateau location. It has visual command over the Rio Grande valley but is visually concealed by defining landforms and,until recently, accessible only by a single winding road which climbs the plateau's face. It was this latter characteristic which influenced selection of Los Alamos as a site for the Manhattan Project.

figure 37

Whiterock is an enclosed space bound on the east (From N R South) by a precipice of Rio Grande Canyon which is immediately East of town built fabric. Across the canyon is the visible a ridge formed by hills on the ~~East~~ west edge of Santa Fe plain. ~~To the West~~ This ridge is visible from center of settlement and because canyon edge is not visually recognizable unless close to it - these hills appear as East, Southeast, definition. To the ~~East~~ West & North, starting at edge of canyon, Northeast and extending around past West to South West is a long rock ridge, well above eye level, which stands immediately behind houses. The rock ridge is sheer and covered with little vegetation compared to wooded quality of plateau. The eroded face of rock is pocked marked by mass wasting and bubble like cavities characteristic of ~~??~~ lava tuft. There are numerous rock crevices ~~and~~ in the ridge face. The rock ridge and precipice edge are both within the first ring and enclose the Whiterock space. The rock ridge is the dominant edge because precipice edge is visually concealed while ridge is ever present. (over)

Whiterock



broad views of valley & canyon towards east - unlimited, expansive scale, the town is sitting on a precipice but you really have no sense of "edge" until you are right on it - The other 3 directions, S, east, west, make up a horse shoe of immediate-scale elements coming right up to the town - these enclosing items are smooth as on a line, smoothly wrapping around the back of the town.

Whiterock

WHITEROCK'S BUILTSCAPE

As explained in the reference framework, landscape/ builtscape parallels which characterize an Anglo settlement should be identifiable at a larger scale of comprehension than that previously employed. That is, landscape parallels would be manifest in larger patterns and configurations rather than articulation of a building facade. This is not only a product of the automobile's impact on settlement scale but organization of space as earlier characterized in reference to Anglo culture. Using Whiterock as an example, the point was made in Chapter II that a uniform and identical division of land suggested an internal rigidity of subunits and that an overall curvalinear configuration suggested arrangement of subunits to fit an overarching concept or landscape condition. In other words, the plan itself is shaped by an idea or landscape constraints, and uniform parceling of property is a maximization of division within that idea or constraint. This is supported by J.B. Jackson's observation that, "the basic Anglo-American dwelling unit is the house which we subdivide into rooms..." [1]

Considering Whiterock at this scale of comprehension, it becomes clear that the development's unbuilt center (Figure 38,A) is defined

---

1. Jackson, J.B., "First Comes the House," Landscape, Vol. 9, No.2., 1959, p. 28.

by a ring road (Figure 38,B)instead of a set of buildings. The dependence of all other movement patterns on this ring road as a thoroughfare of circulation, further reveals that it parallels the plaza as an organizational device. Following this analysis, it appears that the ring road is equal, if not greater, in importance than the unbuilt center (A) and that the unbuilt center (A) preserves the integrity of the ring road (B). This observation is reinforced by:

A. Visual access to the unbuilt center is restricted -- it is visually concealed within the built fabric -- vision is channeled to the ring road.

B. Physical access to the unbuilt center is restricted -- movement is directed to the ring road.

C. Houses are oriented to the ring road and not the unbuilt center.

In our earlier analysis, we repeatedly saw that where landforms enclosed a setting within an appropriate scale of consciousness (rings on the sacred circle map), the settlement replicated that enclosure by defining a central open space within its fabric -- for example, the plaza at Las Trampas and lack of a plaza at Alcalde. Here, we see a similar circumstance and again it occurs within a landscape enclosure. While the most obvious expression of that enclosure is Whiterock's unbuilt center (A),

it can also be observed that the ring road is a conscious result of that enclosed central space. That is, the ring road, more than the unbuilt center, is a focus about which the rest of the settlement is organized,and it is clearly articulated by concentration of development, pavement and focus of movement -- a quality associated with plazas and not necessarily with the unbuilt center. This seems to be the implied priority of articulating a circumference with 33 plus acres of vacant land.

If the landscape linkage vocabulary is transferable to this site, then the ring road, as a speculated response to a natural enclosure, should be associated with the same kind of landscape linkages as previously associated with Indian and Hispanic plazas. That is,one should be able to establish the same kinds of parallels between definition of the ring road corridor and definition of the natural enclosure as were identified in previous test sites. The importance of the ring road as an embodiment of landscape relationships is visible in the outer perimeter, rather than inner perimeter. The inner perimeter is penetrated by a number of secondary movement networks (Figure 38; C,D,E and F) However, these secondary movement networks do not contradict structural importance of the ring road,as once in the network there are no exit alternatives,and one ultimately returns to the ring itself. Therefore, the

inner perimeter maintains definitions of a movement ring, but it is a weaker definition than that which characterizes the outer perimeter. Weakness of the inner perimeter is further reinforced by random building lines and random street orientation of structures. A weaker definition of the inner perimeter would be expected if, as we speculate, the outer perimeter is shaped by external and concentric natural edges. Therefore, the inner circumference simply serves to maintain the integrity of a circular flow -- an idea also reinforced by the unbuilt center -- that which is encircled (Figure 36).

Along the outer perimeter, one can identify four levels of definition which parallel respective characteristics of natural definition. These are: continuous edge, contiguous edge, diffuse edge, and monolithic edge quality.

Continuous Edge and Monolithic Edge Quality

There are no diversions (streets leading off) from that portion of the ring road which arcs northeast, east , to southeast (Figure 38,H). This segment of the perimeter is uninterrupted -- continous -- therefore, it is a continuous edge. Parallel to this perimeter segment are both the rim of Whiterock Canyon and the unbroken, horizontal bluff along its east wall. Here, one sees the same kind of built response to a precipice that was earlier observed at Truchas and Abiquiu -- namely a continuous

edge. Also, just as the bluff visually reinforces the rim of Whiterock Canyon, uninterrupted perimeter movement is reinforced by a regimented distribution of structures along a rigid building line parallel to the perimeter (Figure 38,G). Thus, one can see a further articulation of the continuous edge -- a monolithic quality-- similar to that observed at Alcalde. At Alcalde, a monolithic wall parallels Black Mesa and reinforces the axis established by a central street.

Contiguous Edge

While there are diversions from the ring road along that segment which arcs north to west, they are (except for one loop) cul-de-sacs (Figure 38,I). Ring movement is reinforced by the fact that once in the cul-de-sacs, the integrity of circular flow is not challenged. Therefore, this segment of the outer perimeter embodies those essential qualities of a contiguous edge. Paralleling this contiguous edge is the dominant rock escarpment, described earlier as broken by ravines. Here, one sees that Whiterock's response to a strong, horizontal landform, penetrated by ravines and canyons, is similar to that observed at San Ildefonso, Cordova, and Santo Domingo -- a contiguous edge. The importance of these cul-de-sacs as an expression of definition is reinforced by the fact that houses don't front circular movement along this segment of

the ring. Instead, houses front the dead-end diversions. As a result, the ring is only secondarily reinforced by yard fences. This is to be expected as there are no qualities of the escarpment that would logically be expressed by building frontage except for a brief, unbroken segment (monolithic) due north,and here one sees a brief stretch of houses fronting the ring road (Figure 38,J).

Diffuse Edge

That portion of the ring road which arcs southwest to the south (Figure 38,k) is most weakly defined. Here, one encounters movement alternatives which exit from the ring system. The ring itself is only maintained by equal and opposite building frontage along its two perimeters,but its integrity has been challenged. Thus definition is weak but still observable. These are the qualities of a diffuse edge. This diffuse edge is paralleled by an upward sloping of land (previously described) which provides natural definition to the southwest and south. Here, one sees the same kind of builtscape response to a weak natural edge,as observed at Santa Fe and San Ildefonso -- a diffuse edge.

Within this network of edge definition, there is another level of landscape linkages observable. These also parallel

those associated with previous test sites. They are: gaps, focused view, visual containment, selective placement of mass and expression of direction.

Gaps,Focus Views and Visual Containment

In our earlier description of natural definition, it was noted that gaps existed to the northwest and northeast, permitting enframed views of the Jemez and Sangre-de-Cristo mountains, respectively. Parallel to this, two gaps in definition of the outer perimeter exist (Figure 38; L,M) which correspond to these natural openings and permit an appreciation of those same enframed views from the ring road. At no other point is the built fabric opened up for views, and this is another parallel to natural definition. Just as natural edges contain all other views but those permissible through gaps to the northeast and northwest, all views but those permitted via northeast and northwest openings in the outer perimeter are contained by the built fabric. A similar built response to natural views was observed at Taos, Las Trampas, San Ildefonso and Truchas.

Selective Placement of Mass

Again, in our earlier description of Whiterock's landscape setting, it was noted that the dominant landform and natural

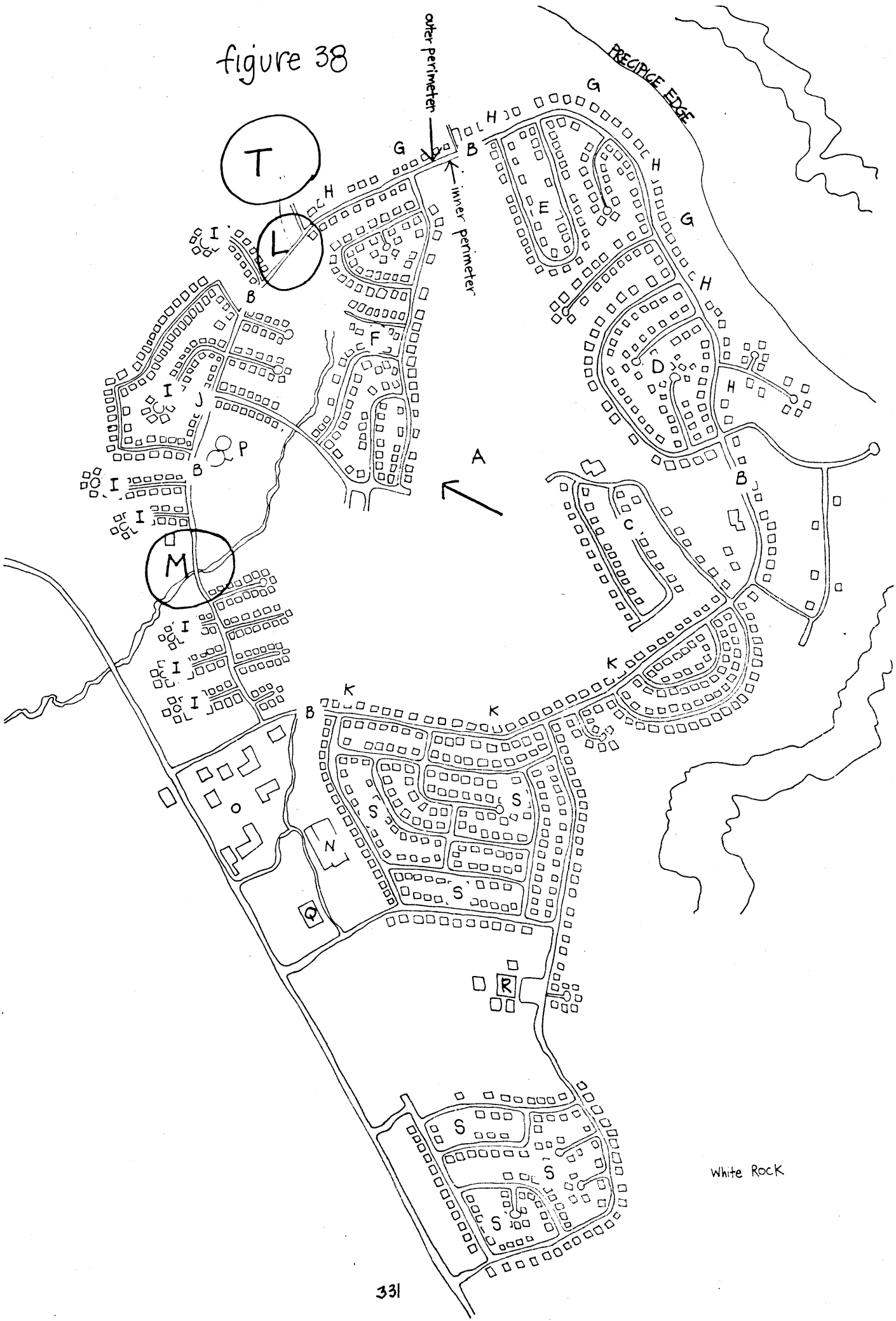
edge was the rock escarpment. In most of our previous test sites, the built response to dominant landforms was a conscious distribution of mass and scale with reference to it. A similar parallel is observable in Whiterock. Here, commercial and educational structures (Figure 38; N,O,P,Q,R), the largest and most massive elements of the settlement fabric, are located west of center -- along the western periphery of development -- parallel to the rock escarpment. This is the same pattern previously seen at Santa Clara, San Juan, Alcalde, Taos, Santa Fe, and others.

Expression of Direction

The natural incline which slopes up and away from Whiterock, defining its southwest/south edge, is the weakest of natural definitions. As the canyon rim and rock escarpment are inflexible, this slope is the only permissible direction of growth. Therefore, later development (Figure 38,S) is extended in this direction,and over the crest of the incline two newer housing subdivisions are under construction (Pajarito Acres and La Cenda). As noticed in reference to other test sites, the direction of physical extension has been preferential to the weakest edge--also seen in Santa Fe. However, it should be noted that in certain sites (for example Santa Clara)

the physical response to spatial release (openness) has been preserved by limiting growth in this direction and forcing it elsewhere. To some extent, this is also true of Whiterock in that considerable area suitable for development exists just beyond the outer perimeter adjacent to the northeast gap (Figure 38,T). Instead of developing this property, it has been left vacant,and baseball fields preserve a visual easement in that direction. It would seem that a more appropriate location for baseball diamonds would be the unbuilt center (A). Thus, as seen at Santa Clara, San Juan, and Tesuque; there is some preferential expression of direction.

figure 38


outer perimeter
inner perimeter
PRECIPICE EDGE
T
L
M
A
B
C
D
E
F
G
H
I
J
K
N
O
P
Q
R
S
White Rock

THE SIGNIFICANCE OF THIS TEST

This brief and informal analysis illustrates that Whiterock can be described using both the landscape linkage vocabulary and landscape rationale, as developed in previous testing. The actual landscape terms employed were: continuous edge, contiguous edge, diffuse edge, gaps, focused views, monolithic edge quality, visual containment, selective placement of mass, and expression of direction. Inasmuch as these terms were used in accordance with the previously established rules of application (direct descriptive parallels), it appears that the vocabulary is transferable in an instance of exaggerated difference. Thus, one must conclude that the landscape linkage vocabulary is reinforced to the extent that it can be applied to all situations within the study area. It is also interesting to note the role of the reference framework in identifying an appropriate level of comprehension. The Anglo attitude toward totality of plan and Whiterock's dependence upon vehicular movement, led to the identification of a structural pattern as expressed by a road network.

Such an understanding of a thematic settlement structure is useful as an insight beyond the more apparent architectural repetitions of Whiterock's mass produced building style -- an affliction which characterizes most suburban developments.

Inæsmuch as Whiterock has no "historic landmarks" in the conventional sense, it apparently has a landscape heritage as rich as communities which are much older. Therefore, one way to generate a visual diversity and enrich this suburban environment would be to undertake a streetscape design program that, at the same time, externalized this historic structure. For example, the ring road could be visually articulated with landscaping (a daytime form) and lighting (a night time form). Subdistricts could also be articulated. Further the regimented segment of housing along the east perimeter could be reinforced by common building or frontyard treatment. Likewise, clusters of houses along cul-de-sacs could be jointly articulated. That is, in some places one would want to reinforce structural repetition and in other places make a statement of structural diversity.

In addition to design treatments, view corridors could be maintained under legal restriction, and historic enabling legislation of New Mexico would make this possible. Further, the unbuilt center could be so designated or at least developed for educational/recreational uses in accordance with guidlines which would preserve its relation to the ring road. Perhaps even

a denser development could be permitted under insightful guidelines. The result of identifying a thematic and historic settlement structure is not only that it places Whiterock in an historic and geographic continuity as well as distinguishes it from suburban Santa Fe, but that it provides a basis for a design framework. It provides some basis for action in areas which have for so long stimied designers because of their apparent visual impoverishment.

CONCLUSION

In the introduction to this thesis, we identified continuity and differentiation as goals of historic preservation. However, we also discussed the conflict that results when seeking these goals simultaneously in the context of a legal necessity for a non-capricious definition of difference (which can be publicly supported in the legislative process) and an operational preoccupation with style as the mode of preservation. The result is the continuity/differentiation dilemma, earlier described as a "tension between identifying what is distinctive (differentiation) in a way which conveys what is continually vital (continuity)." We suggested that the way to resolve this conflict was to identify a structural theme; which, as an underlying dynamic common to all settlements, could be used to explain their physical variations. This would place differentiation, as expressed by these physical variations, in a workable relationship to continuity, as expressed by the structural theme. Thus, to describe difference as an outgrowth of an underlying and unchanging dynamic characteristic of the way settlements are built, is to use terms which identify the essence of a place, at some point in time, relative to its past and future. Further, an underlying, unchanging dynamic which is powered by the relationship between built and natural environments, not only places a settlement in the context of time but in the context of its own landscape setting. Thereby, the continuity goal, which we earlier defined as meaning continuity over time and continuity over space, would be best served by landscape relationship

as a structural theme for preservation. Continuity over time means temporal independence and continuity over space means independence from the cultural subdivisions of a geographic region. In addition to serving the goal of continuity, the goal of differentiation is also served as diverse environments can be explained as manifestations of a particular set of landscape relationships. Therefore, landscape relationships between a settlement and its natural setting can be consistently identified regardless of time or cultural identity and used to explain wide variations in appearance, scale, siting, etc. The relationships themselves can be expressed in a vocabulary of landscape linkages,and settlement differences can be expressed by a particular syntax of vocabulary terms.

To test this theory we set up a methodology of test conditions derived from the above definitions of continuity and differentiation as operational goals. Consistent with these definitions, three test conditions are imposed upon the theory:

1. That the landscape linkage vocabulary be culturally independent and identify aspects of the settlement which are precipitated by natural setting regardless of cultural identity.
2. That the landscape linkage vocabulary be temporally independent and identify aspects of the settlement which are precipitated by natural setting and do not change over time.
3. That the landscape linkage vocabulary be transferable and sufficient to describe unique qualities of widely varied settlement forms.

These three conditions are expressed as specific analytical tests of field data in Chapters IV (cross-cultural continuity test), V (temporal continuity test) and VI (differentiation test). However, executing these tests is dependent upon formulation of a landscape linkage vocabulary. This process of formulation is documented in Chapters I (selection of a study area), II (identification of cultural characteristics relevant to field research and data analysis -- reference framework), and III (explanation of the field research methodology and reduction of field data into an initial vocabulary of landscape linkages).

In order to isolate landscape linkages among varied subtleties of the built fabric, we developed a field survey methodology which allowed us to document both man-made and natural environments in similar terms. These parallel, and therefore comparable portraits, made linkages between the built and natural environments more identifiable. First, we documented the landscape setting of a settlement based on descriptive mapping (Sacred Circle Maps, Viewer Dial, geologic symbols) and written commentary. Then we documented the builtform based on a written commentary shaped by issues derived from our qualitative and physical assessment of the natural setting (articulation of edges, internal structure, etc.). Linkages between the natural and built environment were only identified where identical parallels existed between them -- that is where a symmetrical coincidence of qualitative characteristics

could be recognized. Landscape relationships identified in this way were substantiated by repetition throughout other test sites. Aided by cultural insights as presented in the reference framework, these relationships were categorized as structural or conceptual landscape linkages. The process of establishing parallels between the built and natural environment and further labeling them as conceptual and structural landscape linkages is documented in the landscape/builtscape matrices of Chapter III.

A total of 340 conceptual/structural linkages are identified in this process. However, being distilled from raw field data, many of these initial connections are redundant, represent different levels of generality or otherwise not mutually exclusive. Therefore, Chapter IV presents a further distillation of these 340 relationships into a testable vocabulary of 63 landscape linkage terms which are of uniform generality and mutually exclusive.

These 63 vocabulary terms have been distilled from a survey of 16 test sites selected on the basis of discrete cultural identity. These sites, in turn, serve as the basis of a cross-cultural continuity test. Settlements surveyed represent two distinct cultural groups of historical significance to the study area (Indian and Hispanic). Those landscape linkages which can be observed as repeated in both cultural groups can, thereby, be deemed as not influenced by cultural variation and thus, meet the first test condition of cultural independence. This comparison

of landscape linkages by cultural group, identifying those which are repeated cross-culturally, is documented in the Cross-Cultural Continuity Matrix of Chapter IV.

As a result of systematic comparison, the initial 63 landscape linkages are reduced to a culturally independent vocabulary of 51 terms. The 12 variables which did not carry cross-culturally are primarily those previously identified as structural in nature (such as siting on walls of natural space) and therefore fail to be repeated in the less utilitarian circumstance of the Indian's ritualistic association with a distant landscape. Similarly, other variables which failed to carry cross-culturally are predictably unique to the cultural attributes of either Hispanic or Indian people.

The significance of this test lies in the fact that conceptual relationships primarily constitute the resulting vocabulary of 51 landscape linkage terms. This outcome tends to reinforce the initial assertion of this thesis (introduction) -- that landscape relationships, identifiable within the built fabric, are manifestations of a resonance that exists between people who built a settlement and the landscape they embrace. Resonance, in its use here, is meant to mean a sympathetic vibration -- sympathetic psychic response. The fact that these 51 terms, describing conceptual landscape linkages, can be observed cross-culturally, reinforces an interpretation of historic evidence made in Chapter I. This

interpretation asserts that settlement of the study area by migrating people, some of whom chose to remain while others chose to leave, implies that there is a shared resonance (shared by Hispanic and Indian people) with the common natural setting. While the evidence is not conclusive, it is certainly strong with regard to these assertions. Therefore, a potentially fruitful and useful avenue of further study would be to examine the nature of land eminences selected for monumentalization in the built fabric, with reference to cultural/social/psychic charactersitics of the people themselves. Such a study could shed light on the nature of this resonance and the cognitive significance of the selection process itself.

Having formulated a landscape linkage vocabulary which passed the first test condition of cultural independence, we then imposed the second test condition of temporal independence. For this analytical step, we chose Santa Fe as a test site. This selection was influenced by Santa Fe's long and well documented history which allowed us to accurately reconstruct the physical conditions of its past. Selection was also influenced by Santa Fe's prominence as a point of cultural confluence and its historic prominance as a cultural/commercial/political center within the study area. These two characteristics are important in that they reveal the forces of change to be more evident here than at the cross-cultural test sites. Cross-cultural test sites maintained a discrete cultural

identity as a result of physical isolation.

Using graphic and written data from 18th century sources and Sacred Circle mapping of Santa Fe's mountainous landscape, we were able to describe Santa Fe of 1768 using the landscape linkage vocabulary already formulated prior to the cross-cultural continuity tests (63 landscape linkage terms). In this way both the cross-cultural continuity and temporal continuity tests would be testing the same data set rather than one testing the results of the other. With graphic, written and photographic information from 19th and 20 century sources, we were able to construct similar descriptions of Santa Fe for five other chronological points in history -- each point correspoinding with some evolutionary phase of Santa Fe's development. Using a matrix format which allows systematic comparison of these six descriptive reconstructions, we were able to evaluate the propensity of various landscape linkages, observed in the 1768 settlement, to strengthen, weaken or remain stable over time. To further enrich this evaluation process relevant to the historic preservation problem, we also observed the change propensities of stylistic variables, presently mandated in Santa Fe's Historic District Ordinance, over the same time period.

This process of assessing the changability of landscape linkage and stylistic variables over six chronological points (1768 to 1930) is documented in the temporal continuity matrix of Chapter V. Here, the assessed tendency of each variable to strengthen, weaken,

or remain unchanged is noted by a graphic symbol. Variables evaluated over time are listed along the horizontal axis of this matrix in an order which reflects their stable/unstable tendencies relative to each other. This we call the Scale of Relative Stability. Unstable variables are those which fall at the positive and negative extremes of this scale (characterized by a prevailing tendency to strengthen or weaken) and stable variables are those which occupy the middle range (oscillate over time about a point of stability). Thus, variables which fall within this middle range can be considered uninfluenced by the passing of time and thereby conform to the second test condition of temporal independence.

As previously done with reference to the cross-cultural continuity test, landscape linkage variables in the temporal continuity test are categorized by their structural or conceptual nature. Thus, the total set of variables tested in this analytical step are divided into three groups: stylistic variables; structural landscape linkages; and conceptual landscape linkages. These groupings are clearly illustrated on the scale of relative stability as structural landscape linkages and stylistic variables are aggregated about the unstable positive and negative extremes -- structural landscape linkages about the positive pole (continually strengthening) and stylistic variables about the negative pole (continually weakening). The middle range of stability is comprised almost exclusively of conceptual landscape linkages. Thus the

two testing procedures, conducted so far, reinforce each other by identifying a conceptual range of landscape linkages as both culturally and temporally independent.

These results are significant to the hypothesis in that they substantiate landscape relationship as a structural theme, to the extent that a single landscape linkage vocabulary can simultaneously express the two dimensions of continuity (continuity over time and continuity over space). If, as stated earlier, continuity is best served as a structural theme for preservation, and landscape relationship meets the conditions of continuity, then landscape relationship seems (at this point) a suitable structural theme.

Equally important is that test results reveal two dimensions of instability, as reflected by the consistent tendency of structural landscape linkages to strengthen and stylistic variables to weaken. As discussed earlier, preservation decisions are made with reference to stylistic considerations -- those variables identified as unstable in the Scale of Relative Stability. Thus, it seems that decisions made on the basis of style cannot be considred continually valid or applicable with reference to time, nor do they express any kind of continuity with the past or future. This reinforces our initial argument (introduction) that style as the mode of preservation disrupts continuity. This raises some question about the wisdom of making decisions which are insensitive to change and therefore interrupt the dynamics of change itself (reinforce

something that consistently weakens).

The same arguments directed against stylistic variables can also be posed against the opposite pole of our stability scale -- structural landscape linkages. Where stylistic variables embrace traditional historic preservation, the kinds of issues associated with structural landscape linkages embrace the more traditional areas of urban planning. Planning decisions made solely on the basis of structural consideration are decisions made in reference to the landscape as a constraint rather than a compelling force. These are decisions made on the limited basis of economy and efficiency and are thereby insensitive to other issues of cognitive urban structure, visual quality, and so on. The 1947 Bartholomew plan for Santa Fe is an example of structural decision planning and suggests that a proposed distribution of future population "would be an economic and efficient area in which to provide the essential public services and facilities." [1] This raises some serious questions as to the impact such growth decisions will have on stable dimensions of Santa Fe's form as expressed by conceptual landscape linkages (the plaza, San Francisco Street, irregular street patterns, etc.). If this stable urban structure is radically altered, then the essence of Santa Fe's unique character will be lost,and preservation of a few old buildings will not make up for it. It seems that we somehow realize this as the efforts of preservation are continually

---

1. Bartholomew, Harland and Assoc., Comprehensive City Plan, Santa Fe City Planning Commission, 1947, p. 31.

trying to encompass larger segments of the physical environment such as blocks, districts and ultimately entire towns. Santa Fe's Historic District now covers the entire central urban area and a large portion of its eastern suburb, but still limits itself to style. This exhibits the need for planning and preservation to work in closer partnership and expand their respective basis of decision to include landscape relationship.

Testing of the landscape linkage vocabulary, as previously described, was designed to apply the conditions of continuity to our hypothesis. However, these tests have also documented that the landscape linkage vocabulary can be used to describe sixteen different test sites. Thus, the condition of differentiation has been tested as well. Yet, to address differentiation in a manner consistent with previous stages of this research, a separate and specific test was executed. Thus, Whiterock was selected as the most suitable test site because of its physical and cultural departure from all previously studied settlements. The test itself concerned the extent to which Whiterock,as a grossly different physical form,could be described using the landscape linkage vocabulary thus far developed. This process of applying the vocabulary to Whiterock is documented in Chapter VI. The results of this test reveal that Whiterock's physical form could be described in great detail,using landscape linkage terms, as an expression of landscape relationship. Thus, the landscape linkage vocabulary can be

considered applicable to settlements which vary widely in built form and thereby meeting the third test condition of differentiation -- transferability.

These results are significant in that they support our earlier assertion (introduction) that an appropriate relationship between continuity and differentiation would resolve the continuity/differentiation dilemma. In the Whiterock test, this relationship is clearly observed. The landscape relationship structural theme places Whiterock in the context of a history and setting shared with the neighboring Hispanic and Indian sites previously studied. Yet this landscape relationship is expressed in entirely different dimensions of physical form (circulation patterns rather than building facades). Therefore, the landscape linkage vocabulary not only describes unique aspects of this settlement (highlighting form elements different than those previously identified) but also describes (at the same time) that shared experience of landscape resonance. In this way, landscape relationship as structural theme simultaneously serves the preservation goals of continuity and differentiation.

Results of the differentiation test not only reveal that widely varied physical forms can be described by the landscape linkage vocabulary but also that a town built in 1961 could lay claim to a heritage it shares with much older Hispanic and Indian settlements. This heritage is not embodied in artifacts of antiquity

but in perpetuating the timeless tradition of building in response to the natural setting. The cultural independence of this landscape relationship suggests that it is a collective memory. The temporal independence of this landscape response suggests that it is a heritage as "old as the hills."

Equally important is that the landscape linkage vocabulary, when applied to Whiterock, highlighted some physical opportunities for environmental enrichment (such as visual articulation of the ring road). This is important because subdivision environments have for so long stymied designers. The unrelenting uniformity of their physical fabric has been regarded as devoid of redeemable attribute because it offers no physical cue for more than a cosmetic design treatment. However, the landscape linkage vocabulary identifies unique form qualities in a typical subdivision setting of mass-produced housing. In so doing, it penetrates the barrier of uniformity and identifies design opportunities. These design opportunities are more than cosmetic in that they serve to strengthen the underlying identity of Whiterock.

The Whiterock test is provacative in that landscape relationships can be recognized in an environment typical to that of contemporary urban settings. However, being only a single example of such development, it can not be considered conclusive -- although the Santa Fe test could be regarded as a second and reinforcing example.

The history of Whiterock as presented in Chapter VI raises some further question as to how representative it is of contemporary anglo/urban environments. Therefore, generalization from these tests results to a contemporary urban setting cannot be methodologically justified.

Hispanic and Indian cultures display (and have displayed through history) a certain economic/technological similarity. For example, both cultures were/are maintained by subsistance agriculture. Also, while Spanish colonials represented a more advanced level of technological development than their Indian neighbors, the rigors of survival on an arid frontier necessitated that they borrow much of the Indian's way of life (adobe) and backslide technologically. However, Whiterock represents an extreme economic/technological departure from other test sites (with the exception of Santa Fe). Thus some important questions are raised but not yet answered. To what extent does landscape relationship as an underlying dynamic shaping our environment influence other strong dynamic processes characteristic of our culture such as economics? To what extent is the influence reversed? Also, what impact has a technological leap from Hispanic/Indian villages to the "atomic city" of Whiterock had on the way landscape relationship is internalized to our culture? These questions seem important to reaching a better understanding of our own contemporary environment. Therefore, fruitful and relevant areas of further study would be to expand the analysis of landscape

relationship in an Anglo society,by the systematic selection and study of contemporary urban test sites. It is for this reason that the methodology of this thesis has been documented in detail. Also a parallel study to landscape relationship in a physical context would be a study of it in a social/psychological context, as earlier suggested with reference to the cross-cultural continuity test.

Finally, the study design itself also imposes some limitation on generalizing the landscape linkage vocabulary to contemporary urban environments. Each phase of analysis was initiated under criteria imposed by the previous phase , Therefore , decisions and selections were made not only in accordance with these criteria but in a hierarchial sequence. As a result, the study itself became spatially contained by the study area initially selected. Thus, it is not methodologically justifiable to make generalizations beyond the study area boundaries unless an identical circumstance can be found. Therefore, the need exists for expansion of the work started here to embrace a representative cross section of contemporary environments.

In the course of our thesis, we have endeavored to document the methodology employed and point out both its successes and shortcomings, so that it can be replicated in another place and time by those wishing to expand this initial work. Also we have developed a vocabulary of 51 landscape linkage terms which being independent of

time and culture as well as sufficiently facile to describe wide variations in built form, meet the test conditions of continuity and differentiation imposed upon them. In formulating this vocabulary based upon an underlying and unchanged dynamic of landscape relationship between man-made and natural environment, we have identified a structural theme which places continuity and differentiation in their proper physiognomical relationship (previously described in the introduction). As test results reveal, this resolves the continuity/differentiation dilemma by serving both goals through recognition of a single set of built characteristics in any one built environment. Thus landscape relationship can be considered an alternative to style as the basis for preservation action. Therefore, the three products initially outlined in the introduction (methodology, vocabulary, and structural theme) have been accomplished in the course of this study.

The true importance of this work is that it brings preservation into the mainstream of prescriptive planning -- a need identified in the Santa Fe example. Such a union would make preservation an appropriate and effective tool for environmental enrichment. Also, this thesis points out the importance (repeatedly) of being responsive to time in making planning decisions. In that the test results reveal a stable dimension of the built environment (conceptual landscape linkages), it identifies a means by which policies can be made with reference to time (longitudinal policy)

instead of simply with reference to circumstance (economy and efficiency -- cross-sectional policy). Making decisions on the basis of those things which remain stable over time means that those decisions will have continued relevance to the built environments they influence. Instead of being burdensome constraints for future generations, they will be a welcome point of reference -- a legacy.

APPENDICES

APPENDIX 1
SOURCES FOR THE 1768 LANDSCAPE/BUILTSCAPE MATRIX

SOURCES FOR THE TEMPORAL CONTINUITY MATRIX

1768 -- (earliest graphic record of Santa Fe)

1. Horgan, Paul, The Centuries of Santa Fe, Santa Fe: William Gannon Publisher, 1976.

2. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capitol, Santa Fe New Mexican Publishing Company, 1975.

3. Bunting, Bainbridge, Early Architecture in New Mexico, Albuquerque: University of New Mexico Press, 1976.

4. Shiskin, J.K., The Palace of the Governors, Santa Fe: Museum of New Mexico, 1972.

5. Cerquone, Joseph, In Behalf of the Light: The Dominquez and Escalente Expedition of 1776, Denver: The Dominquez-Escalente Bicentennial Expedition, Inc., 1976.

6. City of Santa Fe Planning Commission, Santa Fe Historic Structure and Townscape, City Options Grant A40-42-128B, Santa Fe, 1976.

7. City of Santa Fe Planning Commission, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, New Mexico, 1977.

8. Simmons, Marc, "Settlement Patterns and Village Plans in Colonial New Mexico," The Journal of the West, Vol. VII, No. 1, January, 1969.

9. Urrutia Map -- 1768 (courtesy of City of Santa Fe Planning Department)

1846 -- (beginning of U.S. control of New Mexico territory)

1. Hogan, Paul, The Centuries of Santa Fe, Santa Fe: William Gannon Publisher, 1976.

2. Shiskin, J.K., The Palace of the Governors, Santa Fe: Museum of New Mexico, 1972.

3. Bunting, Bainbridge, Early Architecture in New Mexico, Albuquerque: University of New Mexico Press, 1976.

4. City of Santa Fe Planning Commission, Santa Fe Historic Structure and Townscape, City Options Grant A40-42-128B, Santa Fe, 1976.

5. City of Santa Fe Planning Commission, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, New Mexico, 1977.

6. Lts. J.F. Gilmer and W.H. Emory map of 1846 (courtesy Santa Fe Planning Department).

7. Lt. J.F. Gilmer map of 1847 (courtesy Santa Fe Planning Department).

8. 1846 Lithograph of Santa Fe (collections in the Museum of New Mexico).

1883 -- (introduction of railroad)

1. Horgan, Paul, The Centuries of Santa Fe, Santa Fe: William Gannon Publisher, 1976.

2. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capitol, Santa Fe New Mexican Publishing Company, 1975.

3. Bullock, Alice, Discover Santa Fe, Santa Fe: Loraine Lavender Publishers, 1973.

4. Meem, John Gaw, Old Santa Fe Today, Albuquerque: University of New Mexico Press, 1966.

5. Bird's Eye View of Santa Fe, 1882, lithograph (collections in the Museum of New Mexico).

6. Photographs from the collections of the Museum of New Mexico.

7. Sanborn map, 1883 (courtesy University of New Mexico map archives).

1898 -- (technological change)

1. Horgan, Paul, The Centuries of Santa Fe, Santa Fe: William Gannon Publishers, 1976.

2. City of Santa Fe Planning Commission, Santa Fe Historic Structure and Townscape, City Options Grant A40-42-128B, Santa Fe, 1976.

3. City of Santa Fe Planning Commission, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, New Mexico, 1977.

4. Shiskin, J.K., The Palace of the Governors, Santa Fe: Museum of New Mexico, 1972.

5. Olivas, Author, The Philip Embury Harroun Collection, Santa Fe: University of New Mexico Press, 1975,

6. Sandborn map, 1898 (courtesy University of New Mexico map archives).

7. Photoraphs from the collection of the Museum of New Mexico.

1913 -- (cultural awareness)

1. Horgan, Paul, The Centures of Santa Fe, Santa Fe: William Gannon Publisher, 1976.

2. City of Santa Fe Planning Commission, Santa Fe Historic Structure and Townscape, City Options Grant A40-42-128B, Santa Fe, 1976.

3. City of Santa Fe Planning Commission, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, New Mexico, 1977.

4. 1912 Thouroughfare Plan (courtesy Santa Fe Planning Department).

5. King's map of Santa Fe, 1912 (courtesy Santa Fe Planning Department).

6. Sandborn map, 1913 (courtesy University of New Mexico map archives).

7. Photographs from the collection of the Museum of New Mexico.

1930 -- (introduction of architectural control)

1. Church, Gordon M., The Aesthetic Urban Landscape: Attitudes Toward Structural Surfaces in the City, Master's Thesis in the Department of Geography, Lincoln: University of Nebraska, 1973.

2. Horgan, Paul, The Centuries of Santa Fe, Santa Fe: William Gannon Publishers, 1976.

3. City of Santa Fe Planning Commission, Santa Fe Historic Structure and Townscape, City Options Grant A40-42-128B, Santa Fe, 1976.

4. City of Santa Fe Planning Commission, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, New Mexico, 1977.

5. Bullock, Alice, Discover Santa Fe, Santa Fe: Loraine Lavender Publishers, 1973.

6. Bartholomew, Harland and Associates, Comprehensive City Plan, Santa Fe Planning Commission, 1947.

7. La Farge, Oliver, Santa Fe: The Autobiography of a Southwestern Town, Norman: University of Oklahoma Press, 1959.

8. Sandborn map, 1930 (courtesy University of New Mexico map archives).

9. Photographs from the collection of the Museum of New Mexico.

APPENDIX 2
EXERPTS FROM THE SANTA FE HISTORIC DISTRICT ORDINANCE

ARTICLE XB

"H" HISTORICAL DISTRICT REGULATIONS

(Editor's note: The area classified as "H" District is set out in Section 4 of Ord. No. 1957-18. Ord. No. 1959-17 adds an historical district to Ord. No. 1957-18, Section 4.)

Section 28-43.5 Purpose of Creation

In order to promote the economic cultural and general welfare of the people of the city and to insure the harmonious, orderly and efficient growth and development of the municipality, it is deemed essential by the city council that the qualities relating to the history of Santa Fe, and a harmonious outward appearance which preserves property values and attracts tourists and residents alike, be preserved; some of these qualities being: The continued existence and preservation of historical areas and buildings; continued construction of buildings in the historic styles, and a general harmony as to style, form, color, proportion, texture and material between buildings of historic design and those of more modern design.

Section 28-43.6 Styles of Architecture

The city council recognizes that a style of architecture has evolved within the city from the year 1600 to the present, characterized by construction with adobe bricks, hereafter called "Old Santa Fe Style," as well as a "Recent Santa Fe Style," which is a development from, and elaboration of, the Old Santa Fe Style with different materials and frequently with added decorations.

a. Old Santa Fe Style

Old Santa Fe Style characterized by construction with adobe bricks, is defined as including the so-called "Pueblo," or "Pueblo-Spanish" or "Spanish-Indian" and "Territorial" styles and is more specifically described as follows:

With rare exceptions, buildings are of one story, few have three stories, and the characteristic effect is that the buildings are long and low. Roofs are flat with a slight slope and surrounded on at least three sides by a firewall of the same color and material as the walls, or of brick. Roofs are never carried out beyond the line of the walls except to cover an enclosed portal, or porch, formed by setting back a portion of the wall, or to form an exterior portal, the outer edge of the roof

being supported by wooden columns. Two-story construction is more common in the Territorial than in other sub-styles, and is preferably accompanied by a balcony at the level of the floor of the second story. Facades are flat, varied by inset portales, exterior portales, projecting vigas or roof beams, canales or waterspouts, flanking buttresses and wooden lintels, architraves, and cornices, which as well as doors are frequently carved, and the carving may be picked out with bright colors. Arches are almost never used except for non-functional arches, often slightly ogive, over gateways in free standing walls.

All exterior walls of a building are painted alike. The colors are those of natural adobe, ranging from a light earth color to a dark earth color. The exception to this rule is the protected space under portales or, in church derived designs, inset panels in a wall under the roof, in which case the roof overhangs the panel. These spaces may be painted white or a contrasting color, or have mural decorations.

Solid wall space is always greater in any facade than window and door space combined. Single panes of glass larger than thirty inches square are not permissible except as otherwise provided.

The rule as to flat roofs shall not be construed to prevent the construction of skylights or installation of air conditioning devices, or other necessary roof structures, but such structures, other than chimneys, flues, vents and aerials, shall be so placed as to be concealed by the firewall from the view of anyone standing in the street on which the building fronts.

True Old Santa Fe Style buildings are made of adobe bricks with adobe plaster finish. Construction with masonry blocks, bricks, lib or other materials with which the adobe effect can be simulated is permissible, provided the exterior walls are not less than eight inches thick, and that geometrically straight facade lines are avoided. Adobe plaster or hard plaster simulating adobe, laid on smoothly, is required.

It is characteristic of Old Santa Fe Style commercial and public buildings to place a portal so that it covers the entire sidewalk, the columns being set at the curb line.

b. Recent Santa Fe Style

The intent of this style is to achieve harmony with historic buildings by retention of a similarity of materials, color, proportion and general detail. The dominating effect is to be that of

adobe construction.

No building shall be over two stories in height in any facade unless the facade shall include projecting or recessed portales, setbacks or other design elements.

The combined door and window area in any publicly visible facade shall not exceed forty per cent of the total area of the facade except for doors or windows located under a portal.

No door or window in a publicly visible facade shall be located nearer than three feet from the corner of the facade.

No cantilevers shall be permitted except over projecting vigas, beams or wood corbells, or as part of the roof treatment described below.

Not less than eighty per cent of the surface area of any publicly visible facade shall be adobe finish, or stucco simulating adobe finish. The balance of the publicly visible facade, except as above, may be of natural stone, wood, brick, tile, terra cotta or other material, subject to approval as hereinafter provided for building permits.

The publicly visible facade of any building, and of any adjoining walls, shall, except as otherwise provided, be of one color, which color shall simulate a light earth or dark earth color, matte or dull finish, and of relatively smooth texture.

Facade surfaces under portales may be of contrasting or complementary colors. Windows, doors and portales on publicly visible portions of the building and/or walls shall be of one of the Old Santa Fe Styles, except that buildings with portales may have larger plate glass areas for windows under portales, only. Deep window recesses are characteristic.

Flat roofs shall not have more than thirty inches overhang.

Ordinance continues, Section 28-43.7 through Section 28-43.18. [1]

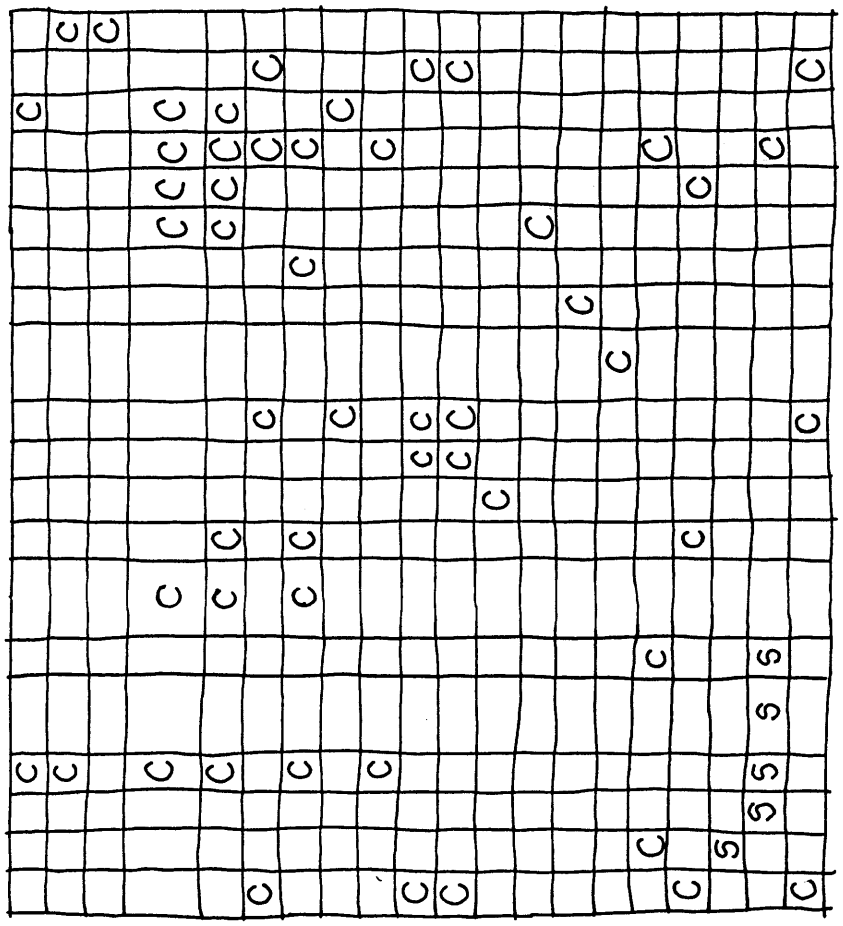
---

1. Santa Fe City Planning Department, Zoning and Related Ordinances, Santa Fe: 1967, Part II, p. 1 - 6.

APPENDIX 3
FIELD SURVEYS OF TYUONYI AND PUYE'

1. flat, open, small canyon bottom
2. canyon aligns E/W
3. south canyon wall forms lineal edge
4. N canyon wall forms crescent alcove
5. canyon extends to SW (uphill)
6. bottom enclosed by high sloping (steep) canyon walls
7. canyon wall to NW broken by ravines
8. canyon wall to N sheer barren face texture
9. S canyon wall, broken rubble, texture of basaltic rocks
10. river flows E/W
11. canyon entrance to E
12. canyon entrance, necks down & turn SE
13. views confined by canyon walls
14. uniform, continuous canyon definition of space - monolithic canyon walls to S/E/W
15. N wall is soft, erodable, volcanic tuft
16. extreme shadow conditions due to high canyon walls
17. elliptical shaped enclosed space
18. arable land limited to canyon bottom
19. river flows at base of S canyon wall
20. views directed by canyon face SW & E

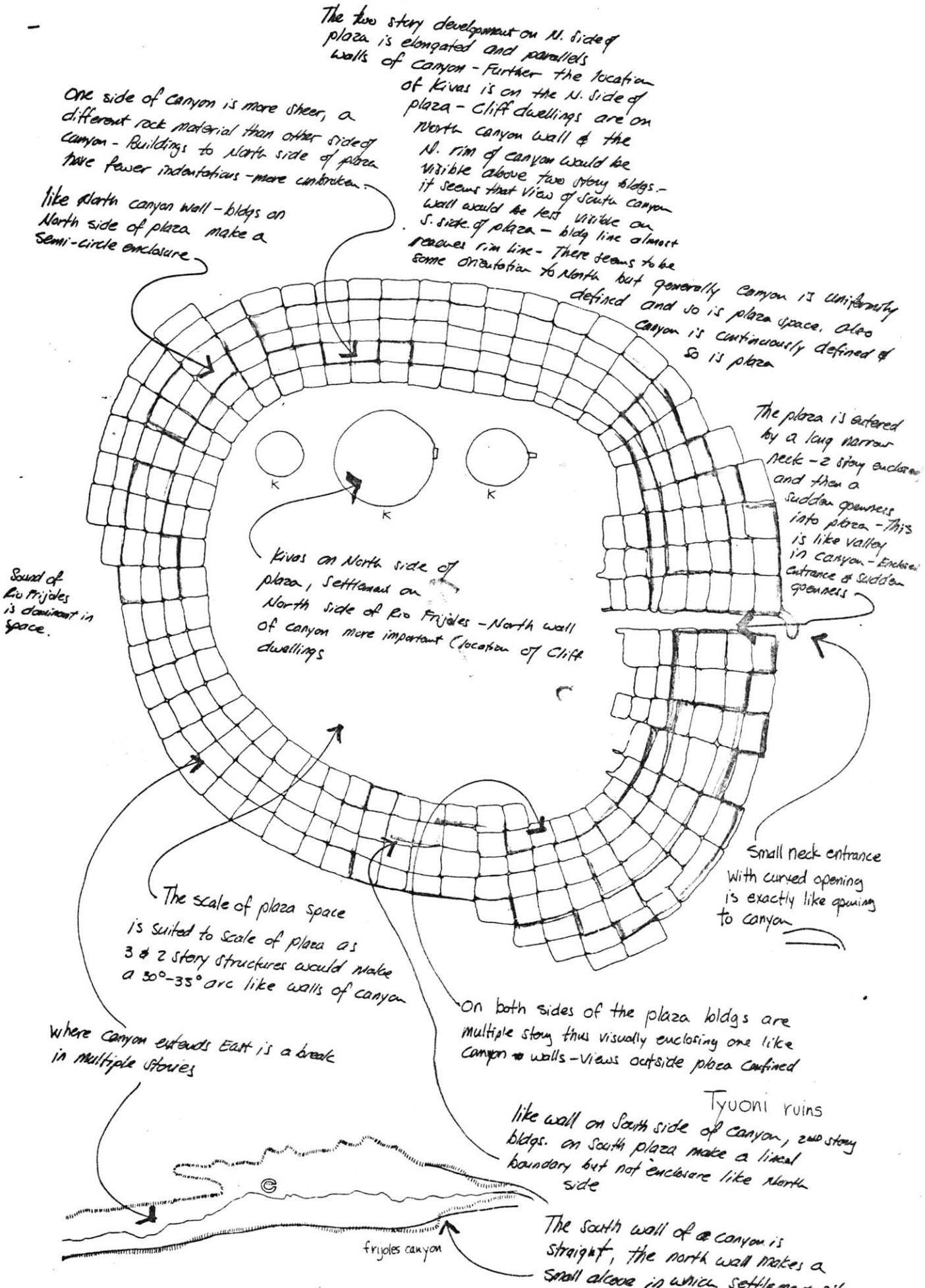
• landscape •

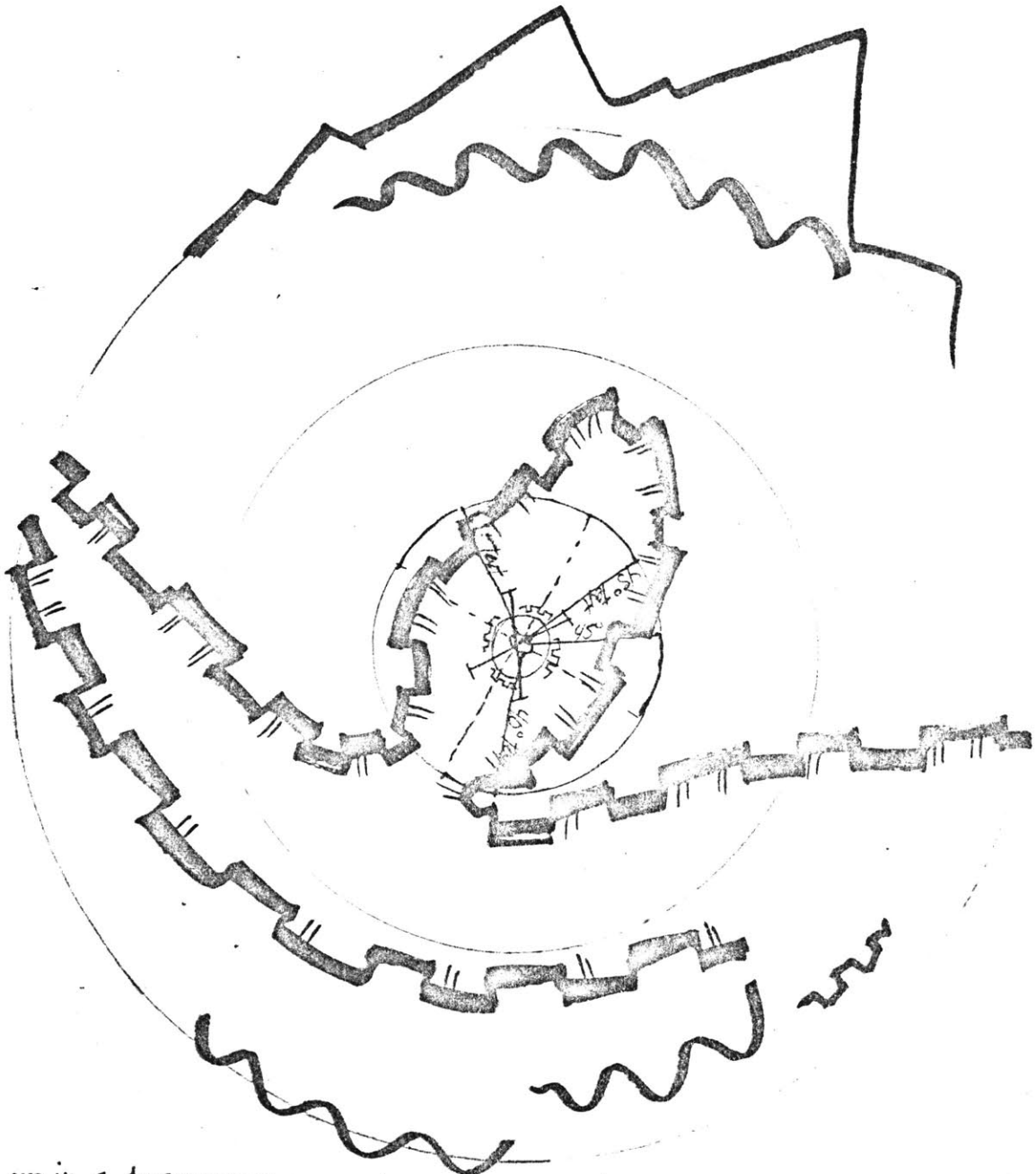


Tuvayi

• built scape •

1. elliptical enclosed plaza space
2. flat, open plaza
3. intermediate scale plaza space
4. continuous one-story definition of plaza circumference
5. continuous 2nd story edge to S, E, N
6. enframed gap in multi-story edge to W (raised gap)
7. 2nd story edge contiguous to NW
8. 2nd story edge to S forms lineal boundary
9. 2nd story edge to N forms crescent alcove
10. narrow entrance corridor penetrates E edge
11. 3rd story forms enframed corridor on NE & SE
12. E end of entrance corridor necked to SE
13. upper stories set back
14. N edge forms smooth facing
15. S edge forms broken, ragged, facing
16. distribution of kiva to N
17. views outside plaza blocked N & S
18. sound of water in plaza
19. cliff dwellings in N canyon wall
20. E/W alignment of elliptical space


The two story development on N. side of plaza is elongated and parallels walls of canyon - Further the location of kivas is on the N. side of plaza - Cliff dwellings are on North canyon wall & the N. rim of canyon would be visible above two story bldgs. - it seems that view of South canyon wall would be less visible on S. side of plaza - bldg line almost reaches rim line - There seems to be some orientation to North but generally canyon is uniformly defined and so is plaza space. Also canyon is continuously defined & so is plaza
One side of canyon is more sheer, a different rock material than other side of canyon - Buildings to North side of plaza have fewer indentations - more contrast.
like North canyon wall - bldgs on North side of plaza make a semi-circle enclosure
The plaza is entered by a long narrow neck - 2 story enclosure and then a sudden openness into plaza - This is like valley in canyon - Enclosed entrance & sudden openness
K
K
K
Kivas on North side of plaza, Settlement on North side of Rio Frijoles - North wall of canyon more important location of Cliff dwellings
Sound of Rio Frijoles is dominant in space.
Small neck entrance with curved opening is exactly like opening to canyon
The scale of plaza space is suited to scale of plaza as 3 & 2 story structures would make a 30°-35° arc like walls of canyon
On both sides of the plaza bldgs are multiple story thus visually enclosing one like canyon walls - Views outside plaza confined
Where canyon extends East is a break in multiple stories
Tyuoni ruins
like wall on South side of canyon, 2nd story bldgs. on South plaza make a linear boundary but not enclosure like North side
The South wall of canyon is straight, the north wall makes a small alcove in which settlement sits
frijoles canyon



because you are in a deep narrow canyon the scale is very impressive, directing your view upward to the sky - adding an element of unlimited scale. The view is very directed out of the canyon, it seems endless your only view of it is a winding canyon, w/ no opening. The canyon is sheer rock face, etched w/ holes, it is an incomprehensible scale, creating a very enclosed space with a narrow opening at one end opening up to the valley.

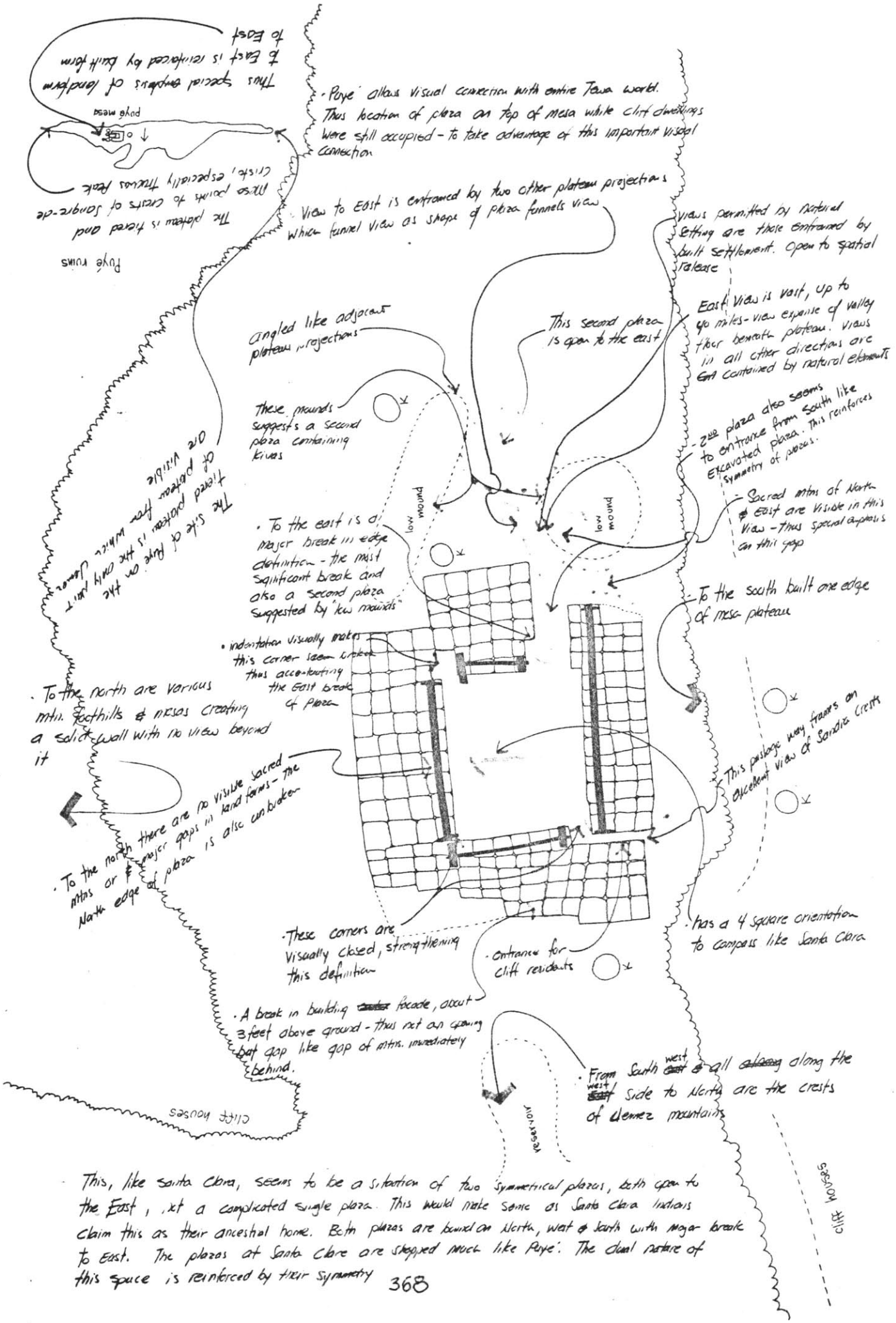
Puyé

•landscape•

1. space defined by precipice edge of mesa island
*2. mesa top commands view of ritual world
3. sense of height and visual command of setting
4. mesa elongated E/W
5. mesa sits on E/W elongated finger of plateau
*6. mesa space defined by "U" at mtn. foothills to N/S/W
*7. views directed E by enframing landforms
8. expansive vista to E
9. mesa surrounded by flat expanse of arable plateau
10. gap in landforms to W
11. dominant landform to W
12. Truchas peak visible to east-vista view
13. Tsiconna peak visible to W-directed view (heirarchical)
14. Sandia peak visible to S-constrained view
15. open views contained to N/S/W
16. E/W massing of landforms

•builtscape•

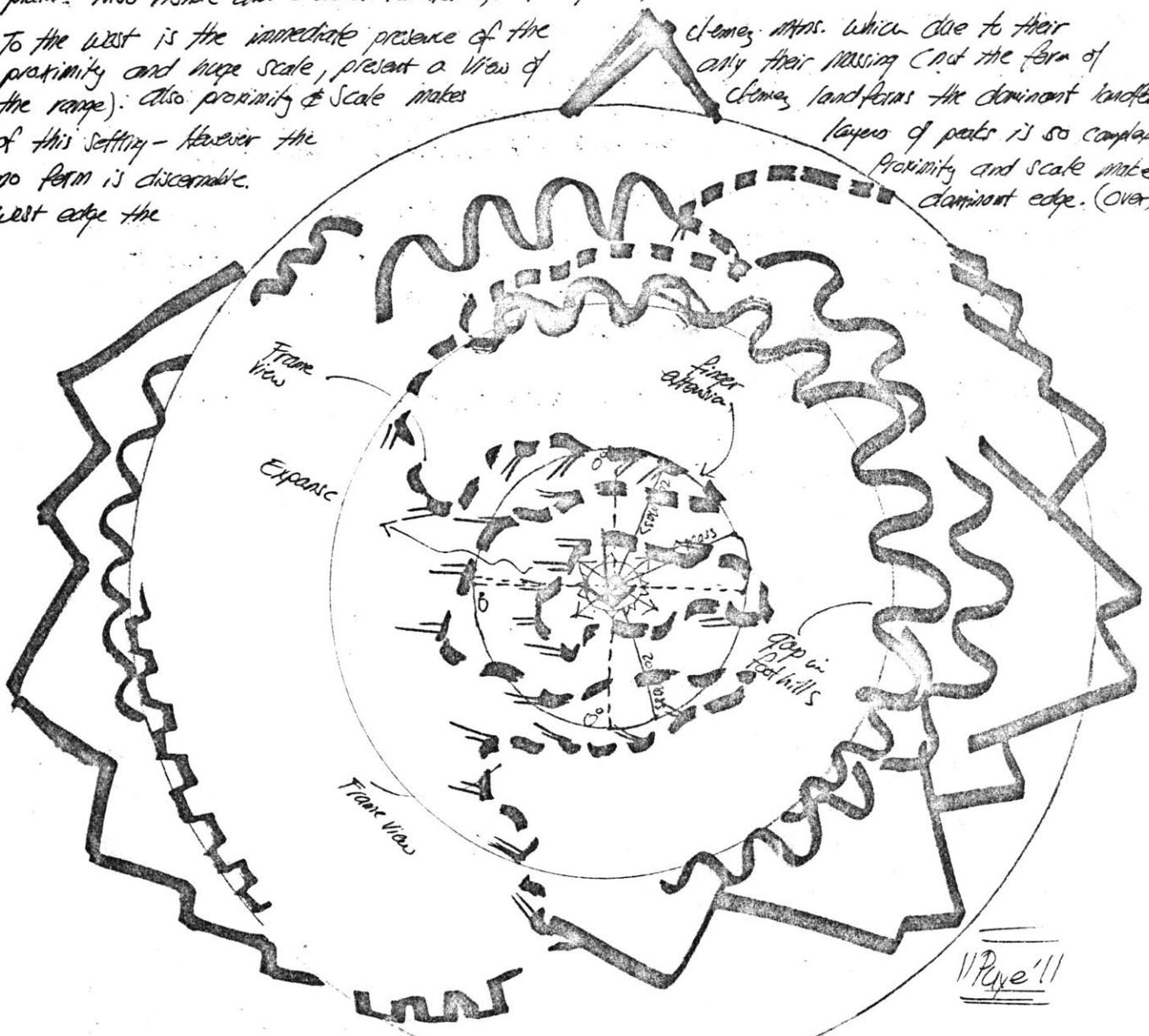
1. central, enclosed plaza space
2. continuous edge defines plaza N/S/W
3. U-shaped plaza enclosure
*4. plaza opens to E
*5. raised, enframed gap in W edge
*6. views directed E
*7. E/W alignment of settlement
8. cardinal orientation of plaza space
9. narrow corridor gap in SE corner
10. views N/S/W contained by edges
11. settlement situated on mesa top
12. sheer-face building frontage on plaza
13. channeled view to west
14. focused view to S



This, like Santa Clara, seems to be a situation of two symmetrical plazas, both open to the East, at a complicated single plaza. This would make sense as Santa Clara Indians claim this as their ancestral home. Both plazas are bound on North, West & South with major break to East. The plazas at Santa Clara are shaped much like Puye'. The dual nature of this space is reinforced by their symmetry

Paye is a tiered mesa - that is a mesa on top of a larger extension of a major plateau. To the East is an expansive vista of Rio Grande Valley and the form of the Sangre de Cristo range is visible. However, views to east are framed by adjacent closer like extensions of the adjacent plateau which creates a sense of enclosure. Thus the material space in which Paye Mesa sits is a focused horse shoe, like the setting of Santa Clara. To the South are visible foothills of Jemez Mountains, other layers of Pajarito Plateau, as well as hills of Santa Fe plain. Also visible above lower landforms, in foreground, is Sandia Crest.

To the west is the immediate presence of the Jemez mtns. which due to their proximity and huge scale, present a view of only their massing (not the form of the range). Also proximity & scale makes Jemez landforms the dominant landform of this setting - However the layers of peaks is so complex, no form is discernable. Proximity and scale make west edge the dominant edge. (over)



on east and northeast points the scale is expansive and views can extend up to 40 miles - to Colorado border on east side there is some sense of stepping up to the Sangre de Cristo - the western side of site is very immediate scale, even looming, over the site. The south is a smooth line of mesa, an intermediate scale, over this in the far distance you can see the turtle back of Sandia peak sticking up. The rest of the north side has some intermediate scale definition in the form of mountains. The space is confined by a cliff (plateau) set into a canyon w/strong definition at one end (W.), hierarchical definition at East end — the South is a wall, intermediate scale from plateau and the North affords an opening with a vast view - the site is generous directly and constrained.

Paye

SELECTED BIBLIOGRAPHY

BOOKS AND REPORTS

1. Adams, George F. and Wyckoff, Jerome, Landforms, New York: Golden Press, 1971.

2. Allen, John Houghton, Southwest, Philadelphia: J.B. Lippincott Co., 1952.

3. Arnheim, Rudolf, Entropy and Art: An Essay on Disorder and Order, Los Angeles: University of California Press, 1971.

4. Baldwin, Brewster and Kottowski, Frank E., Scenic Trips to the Geologic Past -- #1 - Santa Fe, Socorro: New Mexico Institute of Mining and Technology, 1968.

5. Bandelier, Adolf F., The Delight Makers: A Novel of Prehistoric Pueblo Indians, New York: Harcourt, Brace, Jovanovich Inc., 1971.

6. Bartholomew, Harland and Associates, Comprehensive City Plan, Santa Fe City Planning Commission, 1947.

7. Beck, Warren A. and Haase, Ynez D., Historical Atlas of New Mexico, Norman: University of Oklahoma Press, 1969.

8. Berger, Peter L. and Luckmann, Thomas, The Social Construction of Reality: A Treatise on the Sociology of Knowledge, Garden City: Doubleday and Company, 1967.

9. Bullock, Alice, Discover Santa Fe , Santa Fe: Loraine Lavender Publishers, 1973.

10. Bullock, Alice, Mountain Villages, Santa Fe: Sunstone Press, 1973.

11. Bunting, Bainbridge, Early Architecture in New Mexico, Albuquerque: University of New Mexico Press, 1976.

12. Bunting, Bainbridge, Of Earth and Timbers Made: New Mexico Architecture, Albuquerque: University of New Mexico Press, 1976.

13. Bunting, Bainbridge, Taos Adobes, Santa Fe: Museum of New Mexico Press, 1964.

14. Cerquone, Joseph, In Behalf of the Light: The Dominquez and Escalante Expedition of 1776, Denver: The Dominquez-Escalante Bicentennial Expedition Inc., 1976.

15. Church, Gordon M., The Aesthetic Urban Landscape: Attitudes Toward Structural Surfaces in the City, Master's Thesis in Department of Geography, Lincoln: University of Nebraska, 1973.

16. Clark, Kenneth, Landscape Into Art, London: Penguin Books, 1966.

17. Clay, Grady, How to Read the American City, New York: Praeger Publishing Company, 1973.

18. Cordova, Gilberto Benito, Abiquiu and Don Cacahuate: A Folk History of a New Mexican Village, Los Cerrillos, New Mexico: San Marcus Press, 1973.

19. Costonis, John J., Space Adrift: Landmark Preservation and the Marketplace, Chicago: University of Illinois Press, 1974.

20. Deloria, Vine, Jr., Custer Died for Your Sins, New York: Avon Books, 1969.

21. Disbrow, Alan E., Stoll, Walter C., Geology of the Cerrillos Area, Santa Fe County, New Mexico, Socorro: New Mexico Institute of Mining and Technology, 1957.

22. Dozier, Edward, The Pueblo Indians of North America, Dallas: Holt, Rinehart, Winston, Inc., 1970.

23. Dutton, Bertha, Let's Explore Indian Villages Past and Present, Santa Fe: Museum of New Mexico Press, 1962.

24. Dutton, Bertha, The Pueblos, Englewood-Cliffs, New Jersey: Prentice-Hall, 1975.

25. Eliade, Mircea, The Myth of the Eternal Return, translated, W.R. Trask, New York: Pantheon, 1954.

26. El Santuario de Chimayo, Spanish Colonial Arts Society, Inc., 1956.

27. Fergusson, Harvey, Rio Grande, New York: William Morrow and Company, 1967.

28. Fewkes, Jesse Walter, Designs on Prehistoric Hopi Pottery, New York: Dover Publications, Inc., 1973.

29. Gilpin, Laura, The Rio Grande-River of Destiny, New York: Duell, Sloan, and Pearce, 1949.

30. Gladwin, Harold, History of the Ancient Southwest, Portland, Maine: Bond, Wheelwright Company, 1957.

31. Gonzalez, Nancie L. The Spanish-Americans of New Mexico: A Heritage of Pride, Albuquerque: University of New Mexico Press, 1967.

32. Goody, Brian, Images of Place: Essays on Environmental Perception, Communication and Education, Birmingham: University of Birmingham Press, 1974.

33. Gursaw, Allan, A Sense of Place: Artist and the American Land, Friends of the Earth, Inc., 1971.

34. Hammond, George P. and Rey, Agipito, editors, Narratives of the Coronado Expedition, Albuquerque: University of New Mexico Press, 1940.

35. Hart, John Fraser, The Look of the Land, Englewood Cliffs, N.J.: Prentice Hall, Inc., 1975.

36. Hayden, Dolores, Seven Utopian Settlements, Cambridge: MIT Press, 1976.

37. Hewett, Edgar L., Handbooks of Archaelogical History: Pajarito Plateau and Its Ancient People, Albuquerque: University of New Mexico Press, 1938.

38. Hewett, Edgar L. and Dutton, Bertha, editors, The Pueblo Indian World: Studies on the Natural History of the Rio Grande Valley in Relation to Pueblo Indian Culture, Albuquerque: University of New Mexico Press, 1945.

39. Higham, John, Strangers on the Land: Patterns of American Nativism 1860 - 1925, New Brunswick: Rutgers University Press, 1955.

40. Horgan, Paul, The Centuries of Santa Fe, Santa Fe: William Gannon Publisher, 1976.

41. Hosmer, Charles B., Jr., The Presence of the Past: A History of The Preservation Movement in the United States Before Williamsburg, New York: Putnam, 1965.

42. Hunter, M.L., Memory, Baltimore: Penguin Books, 1964.

43. Hussey , Christopher, English Gardens and Landscapes 1700 - 1750, New York: Funk and Wagnalls, 1967.

44. Huth, Hans, Nature and the American: Three Centuries of Changing Attitudes, Lincoln: University of Nebraska Press, 1972.

45. Jenkins, Myra Ellen, A Brief History of New Mexico, Albuquerque: University of New Mexico Press, 1974.

46. Johnson, Ross B., Pecos National Monument New Mexico -- Its Geologic Setting, Geologic Survey Bulletin 1271-E, U.S. Department of the Interior, 1969.

47. Kelley, Vincent C., Scenic Trips to the Geologic Past #9 - Albuquerque , Socorro: New Mexico Bureau of Mines and Mineral Resources, 1974.

48. Kimble, George H.T., The Way of the World, New York: George Grady Press, 1953.

49. Kluckhohn, Clyde, Culture and Behavior, New York: The Free Press, 1962.

50. Knowles, Ralph, Energy and Form, Cambridge: MIT Press, 1974.

51. Kubler, George, Religious Architecture of New Mexico, Chicago: The Rio Grande Press, 1962.

52. Kubler, George, The Art and Architecture of Ancient America: The Mexican, Maya, and Andean Peoples, Baltimore: Penguin Books, 1962.

53. Kubler, George, The Shape of Time, New Haven: Yale University Press, 1962.

54. La Farge, Oliver, Santa Fe: The Autobiography of a Southwestern Town, Norman: University of Oklahoma Press, 1959.

55. Lieutenant Emory Reports, Albuquerque: University of New Mexico Press, 1951.

56. Los Alamos: Beginning of an Era 1943 - 1945, published by Los Alamos Scientific Laboratory, 1975.

57. Lowenthal, David and Bowden, Martyn J., Geographies of the Mind, New York: Oxford University Press, 1976.

58. Lynch, Kevin, The Image of the City, Cambridge: MIT Press, 1960.

59. Lynch, Kevin, What Time Is This Place?, Cambridge: MIT Press, 1972.

60. Macaulay, Rose, The Pleasure of Ruins, New York: Walker, 1953.

61. Marx, Leo, The Machine in the Garden: Technology and the Pastoral Ideal in America, New York: Oxford University Press, 1964.

62. Meem, John Gaw, Old Santa Fe Today, Albuquerque: University of New Mexico Press, 1966.

63. Meinig, D.W., Southwest: Three Peoples in Geographical Change 1600 - 1970 , New York: Oxford University Press, 1971.

64. Nairn, Ian, The American Landscape, New York: Random House, 1965.

65. Nash, R., Wilderness and the American Mind, New Haven: Yale University Press, 1967.

66. Nicolson, Marjorie Hope, Mountain and Glory: The Development of the Infinite, Utica: Cornell University Press, 1957.

67. New Mexico -- A Guide to the Colorful State, New York: Hastings House, 1953.

68. New Mexico State Planning Office, The Historic Preservation Program for New Mexico, Vol. I and II, State of New Mexico, 1973.

69. Olivas, Arthur, The Philip Embury Harroun Collection, Santa Fe: Museum of New Mexico Press, 1975.

70. Ortiz, Alfonso, New Perspectives on the Pueblos, Albuquerque: University of New Mexico Press, 1975.

71. Ortiz, Alfonso, The Tewa World: Space, Time, Being and Becoming in a Pueblo Society, Chicago: University of Chicago Press, 1969.

72. Ottaway, Harold N., editor, Papers in Anthropology -- Vol. II, Norman: University of Oklahoma Press, Spring, 1970.

73. Pearce, T.M., New Mexico Place Names -- a Geographical Dictionary, Albuquerque: University of New Mexico Press, 1965.

74. People of the Hidden Valley: Guidebook to Picuris Pueblo, Picuris, New Mexico, 1976.

75. Pierson, William Jr., American Buildings and Their Architects, Vol. I Garden City: Anchor Press, 1976.

76. Pettit, Roland A., Los Alamos Before the Dawn, Los Alamos: Pajarito Publications, 1972.

77. Pillsbury, Dorothy C., No High Adobe, Albuquerque: University of New Mexico Press, 1950.

78. Pitt-Rivers, J.A., The People of the Sierra, Chicago: University of Chicago Press, 1961.

79. Records and Maps of the Old Santa Fe Trail, Kenyon Riddle, Raton: New Mexico, 1949.

80. Reeve, Frank D. and Cleveland, Alice Ann, New Mexico: Land of Many Cultures, Boulder: Pruett Publishing Company, 1969.

81. Reno, Philip, Taos Pueblo, Chicago: The Chicago Press, 1974.

82. Sacred Circles: Two Thousand Years of North American Indian Art, Nelson Gallery of Art, Kansas City, 1976.

83. Sanford, Trent E. and Norton, W.W., editors, The Architecture of the Southwest, New York, 1950.

84. Santa Fe City Planning Commission, Zoning and Related Ordinances, Santa Fe, New Mexico, 1971.

85. Schilling, John H., Scenic Trips to the Geologic Past #2 - Taos - Red River - Eagle Nest, New Mexico Circle Drive, Socorro: New Mexico Institute of Mining and Technology, 1968.

86. Schroeder, Albert H., A Brief History of Picuris Pueblo: A Tiwa Indian Group in North Central New Mexico, Adams State College papers in Anthropology, 1974.

87. Scully, Vincent, American Architecture and Urbanism, New York: Praeger Publishing Company, 1976.

88. Scully, Vincent and Current, William, Pueblo Architecture of the Southwest -- A Photographic Essay, Austin: University of Texas Press, 1971.

89. Scully, Vincent,Pueblo-Mountain, Village, Dance, New York: Viking Press, 1972.

90. Shepard, P., Man in the Landscape, Alfred A. Knopf, 1967.

91. Shiskin, J.K., The Palace of the Governors, Santa Fe: Museum of New Mexico, 1972.

92. Simmons, Marc, Yesterday in Santa Fe - Episodes in a Turbulent History, Santa Fe: San Marcus Press, 1969.

93. Smith, J. Russell, Human Use Geography, Dallas: John Winston Company, 1934.

94. Spicer, Edward, Cycles of Conquest, Tuscon: University of Arizona Press, 1962.

95. Stanley, F., The Las Vegas, New Mexico Story, Denver: The World Press, 1951.

96. Stubbs, Stanley A., A Bird's-Eye View of the Pueblos, Norman: University of Oklahoma Press, 1950.

97. Stanton, William, The Leopard's Spot: Scientific Attitudes Toward Race in America, 1815 - 59, Chicago: University of Chicago Press, 1960.

98. The Trail to Frijoles Ruin, Bandolier National Monument -- The National Park Service.

99. Thompson, Laura, Cultures in Crisis: A Study of the Hopi Indians, New York: Harper and Sons, 1950.

100. Town of Cochiti Lake: Our Story, Cochiti Lake, New Mexico Civic Association, 1976.

101. Tuan, Yi-Fu, Topophilia, Englewood Cliffs, New Jersey: Prentice-Hall, 1974.

102. Twitchell, Ralph Emerson, Old Santa Fe: The Story of New Mexico's Ancient Capitol, Santa Fe New Mexican Publishing Company, 1925.

103. Twitchell, Ralph Emerson, The Leading Facts in New Mexican History Vols. I-V, Cedar Rapids: The Torch Press, 1911.

104. Unghade, Herbert E., Guide to the New Mexico Mountains, Denver: Sage Books, 1965,

105. United States Department of Agriculture, Southwestern Trees: A Guide to the Native Species of New Mexico and Arizona, United States Forest Service, 1968.

106. Van Dresser, Peter, A Landscape for Humans: A Case Study of the Potentials for Ecologically Guided Development in an Upland's Region, Santa Fe: Jene Lyon Publisher, 1972.

107. Voght, Evon Z. and Albert, Ethel M., The People of Rimrock, Cambridge: Harvard University Press, 1966.

108. Waters, Frank, Masked Gods, Albuquerque: University of New Mexico Press, 1950.

109. Weigle, Marta, editor, Hispanic Villages of Northern New Mexico: A Reprint of Volume II of the 1935 Tewa Basin Study, with Supplementary Materials, Santa Fe: Jene Lyon Publisher, 1975.

110. White, Leslie A., The Pueblo of Santa Ana, New Mexico, American Anthropological Association, Memoir 60, 44 No. 4, 1942.

111. White, Leslie A., "The World of the Keresan Pueblo Indians" in Stanley Diamond, editor, Primitive Views of the World, New York: Columbia University Press, 1964.

112. Whorf, Benjamin Lee, "An American Indian Model of the Universe," in John B. Carroll, editor, Language, Thought and Reality, Cambridge: MIT Press, 1964.

113. Zelinsky, Wilbur, The Cultural Geography of the United States, Englewood Cliffs: Prentice-Hall, 1973.

114. Zube, Edwin H., Landscape Assessment, New York: Forbes, Dowden, Hutchinson and Ross, 1975.

115. Zube, Edwin H., editor, Landscapes: Selected Writings of J.B. Jackson , Boston: University of Massachusetts Press, 1970.

116. Zucker, Paul, Town Square from Agora to Village Green, Cambridge: MIT Press, 1970.

ARTICLES

1. "Catalogue of New Mexico Farm Building Types," Landscapes 1:3, 1952.

2. Dingemans, Dennis J., "The Urbanization of Suburbia," Landscapes 20:1, 1975.

3. "A Foreigner Looks at the Western Landscape," Landscapes 1:3, 1952.

4. Halprin, Lawrence, "Gardens of the High Sierra," Landscapes 11:2, 1961-62.

5. "The Imitation of Nature," Landscapes 9:1, 1959.

6. Issac, Erich, "Religion, Landscape, and Space," Landscapes 9:2, 1959 - 60.

7. Jackson, J.B., "A New Kind of Space," Landscapes 18:1, 1964.

8. Jackson, J.B., "A Northern New Mexico House Type," Landscapes 1:2, 1951.

9. Jackson, J.B., "Chihuahua as We Might Have Been," Landscapes 1:1, 1952.

10. Jackson, J.B., "High Plains Country," Landscapes 3:3, 1954.

11. Jackson, J.B., "Pueblo Architecture and Our Own," Landscapes 3:2, 1953.

12. Jackson, J.B., "The Almost Perfect Town," Landscapes 2:1, 1952.

13. Jackson, J.B., "The Four-Corners Country," Landscapes 10:1, 1960.

14. Jackson, J.B., "The Westward Moving House," Landscapes 2:3, 1953.

15. Lambert, Marjorie F., "Cities Before Columbus," Landscapes 3:2, 1953 - 54.

16. Leopold, Luna B., "Water and the Southwest," Landscapes 10:1, 1960.

17. Lowenthal, David, "The American Scene," The Geographical Review 58, 1968.

18. Rees, Ronald, "The Scenery Cult," Landscapes 19:3, 1975.

19. Riley, Robert B., "Urban Myths and the New Cities of the Southwest," Landscapes 17:1, 1967.

20. Rose, James C., "The Sensible Landscape," Landscapes 10:3, 1961.

ARTICLES (Continued)

21. Schroeder, Albert H., "Man-Made Environment in the Verde Valley," Landscapes 3:2, 1953 - 54.

22. Shepard, Paul Jr., "They Painted What They Saw," Landscapes 3:1, 1953.

23. Simmons, Marc, "Settlement Patterns and Village Plans in Colonial New Mexico," from The Journal of the West Vol. VII, No. 1, Jan. 1969.

24. Smithson, Robert, "A Sedimentation of the Mind: Earth Projects," ArtForum, Sept. 1968.

25. "Southwestern Landscapes as Seen From the Air," Landscapes 1:2, 1951.

26. Tuan, Yi-Fu, "Mountains, Ruins and the Sentiment of Melancholy," Landscapes, autumn, 1964.

27. Tuan, Yi-Fu and Everard, Cyril E., "New Mexico's Climate: The Appreciation of a Resource," Natural Resources Journal 4, No.2, 1964.

28. Tunnard, Christopher, "Fire on the Prairie," Landscapes 2:1, 1952.

29. "Village Types in the Southwest," Landscapes 2:1, 1952.

30. VanEyck, Aldo, "The Pueblos," Forum (Holland), Vol. 16, No. 3 , August, 1962.

31. Wilmsen, Edwin N., "The House of the Navajo," Landscapes 10:1, 1960.

32. Yates, Francis P., "Architecture and the Art of Memory," Architectural Design 38, Dec. 1968.

BIBLIOGRAPHY
(Not in alphebetized order)

1. Nichols, John, Milagro Beanfield War, New York: Ballantine Books, 1976. (Book)

2. City of Santa Fe Planning Commission, Santa Fe Historic Structure and Townscape, City Options Grant A40-42-128B, Santa Fe, 1976. (Report)

3. City of Santa Fe Planning Commission, Design and Preservation in Santa Fe: A Pluralistic Approach, Santa Fe, New Mexico, 1977. (Report)

4. Conway, A.W., Landscape, Vol. 1, No. 1., 1951 (Article)