MORPHOLOGICAL THEMES OF INFORMAL HOUSING IN COLONIAS:

IMPACTS OF SOCIOCULTURAL IDENTITY ON WEBB COUNTY

HOUSING FORM

A Thesis

by

AZZA MOHAMED KAMAL EL SAYED IBRAHIM

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2005

Major Subject: Architecture

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Approved by:

Co-Chairs of Committee,	Robert B. Warden
	Marlynn L. May
Committee Member,	Charles W. Graham
Head of Department,	Phillip J. Tabb

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ABSTRACT

Morphological Themes of Informal Housing in Colonias: Impacts of Sociocultural

Identity on Webb County Housing Form. (August 2005)

Azza Mohamed Kamal El Sayed Ibrahim, B.S.;M.S.;

Ph.D., Cairo University, Egypt

Co-Chairs of Advisory Committee: Prof. Robert B. Warden
Dr. Marlynn L. May

Informal settlements are a form of housing found in many parts of the world. Self-help housing in informal settlements has different influences that are denoted in the customs and preferences of the residents, which in turn, are reflected on the elements of house exteriors as well as its interior. Colonias in the U.S-Mexico border region are a model of informal settlements. The purpose of this study is to analyze the social and cultural influences on housing fronts in Webb County Colonias. The study focuses on investigating traditional features, vernacular forms, building rituals, and social features as they relate to the morphology of house fronts and their production. The housing model of Geddes and Bertalanffy explained by Turner (1972) was the premise of establishing the argument of this study. A mixed-method approach was used in data gathering from the following three Colonias: Los Altos, Larga Vista, and Rio Bravo. Utilized methods included image-based research through systematic random sampling of housing fronts in the Colonias, as well as a group-administered structured survey distributed during community monthly gathering for food distribution. The development of the research process and methodology incorporated the input of the local community and local leaders and volunteers assisted in its implementation.

The study concluded that past and present experiences of Colonias residents have intense impacts on different aspects contributing to the themes comprising the morphology of Colonias housing fronts. A classical pattern of migration as well as maintained contact and continuous dialogue between residents and their kin were found to result in preserving the inherent native culture of the Colonias' residents and can thus be considered as *core* elements. This preservation of native culture was indicated by utilization of semi-private space, traditional roof forms, privacy and security elements, and building rituals. The study also identified additional secondary *modified* elements, represented by the lack of gates utilization as

a measure of security. These core and modified elements coincide with the Geddes and Bertalanffy model

and therefore it can be deduced that this model can be applied in the case of the Colonias.

DEDICATION

To my mother….”*Farida*”

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Informal settlements, which are a form of housing found in many parts of the world, develop as deprived households, in an attempt to fulfill their housing needs, start to purchase land in illegal subdivisions outside city limits (Kumar 1996). The informal housing that results from the settling of these deprived households in the illegal subdivisions typically suffers from numerous problems that significantly worsen the quality of life of its occupants. Many researchers however, (e.g. Goodman 1979) have argued that the problems of informal housing are not the responsibility of governments alone, and that there are many other actors which can, and probably should, be involved in addressing these problems,

As explained by Serageldin (1990), both informal and squatter settlements take place on the urban fringe. However, a clear distinction exists between these two types. Home owners in squatter settlements (squatters) are aware of the fact that they have no legal right to the land they occupy. The temporary shacks that they settle in, therefore, mostly reflect their fear of eviction. On the other hand, home owners in informal settlements usually purchase their plots in good faith from individuals who claim legal ownership of the land. In addition, these home owners do not feel the threat that code violations may pose to their tenure. Therefore, an argument can be made that the characteristics of the housing in informal settlements are more related to the socio-cultural preferences and needs of their inhabitants.

In the United States, the U.S.-Mexico borderland, one of four regions identified by HUD (2004) as the most deteriorated areas in the U.S, is dotted with hundreds of communities called *Colonias*. The majority of the Colonias' residents actually own their homes (85% in Rio Grande Valley and El Paso) according to Salinas et al. (1998), the Colonias therefore represent a form of informal, and not squatter, settlements. The Colonias are typically classified as rural subdivisions, sometimes referred to as rural slums, and have been portrayed by many as poverty pockets with severely deteriorated life conditions.

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This thesis follows the format and style of the journal Land Use Policy.

Although the Colonias started to grow in the1950s, they remained relatively unnoticed until the 1990s (HAC 2004). Additionally, recent research (e.g. Davies and Holz 1992) has shown that the Colonias are not the static, decaying societies they were thought to be, but rather they are vibrant, spiritually strong communities, with many qualities worthy of investigation and research. This late recognition both of the communities and of their qualities, may have contributed to its physical deterioration, which consequently impacted other social, cultural, and economic aspects of life in the Colonias such as education, health, employment and overall life standards. This view is supported by the fact that the socio-cultural and economic indicators of the U.S.-Mexico region are much less than the national standards in the U.S.

A number of indicators show that problems in the Colonias are severe and are likely to increase. These problems indicate a significant decline in the Colonias, which, combined with the continued migration movements, has resulted in a housing crises in the region which makes it difficult for residents to obtain affordable housing, thus further exacerbating the problems there. These factors, among others, make informal ways of construction the common method of land invasion in the region. This view is supported by Holz & Davies (1989) reporting that around 60% of houses constructed in the border region use informal ways of construction.

Although affordability is undeniably a major factor with regard to informal housing, housing studies have indicated how the house can be more important to its residents than it is to geographers and planners. The type, form and uses of the house typically interpret its physical locale as well as its builders or renovators. These physical characteristics are also influenced by other factors such as: ethnic or racial affiliations, religion, and occupation (Kniffen and Glassie 1982). The residents' influence, which consciously or unconsciously, occurs when they create their own housing by self-help model, can be widely seen in the Colonias. Such an influence is denoted in the customs and preferences of the residents, which in turn, are reflected on the elements of house exteriors, which are the focus of this study, as well as its interior.

Incorporating the residents' influences in housing design however is usually difficult, as indicated by many researchers (e.g. Goodman 1979) who consider them among the toughest constraints of housing design and provision. This difficulty led to the neglect of custom-related issues in housing provision in

many informal settlements. However, residents of informal settings, particularly in the immigrants'

communities such as Colonias, manage to indicate their identity in their houses' forms and production.

Therefore, incorporating the social and cultural aspects shaping resident's identity, in the case of Colonias

will lead to discovering and producing a vernacular housing that reflects the socio-cultural needs of its

inhabitants. Additionally, the absence of representation of such significant aspects in housing produced by

different housing organizations in the border region (e.g. Proyecto Azteca self-help housing) denotes the

absence of identity in the region. Therefore, a clear need exists for investigating these issues in the

Colonias and to incorporate them into housing design and production their. The investigation of the

impact of social and cultural factors on the housing morphology in the Colonias, presented in this study, is

an attempt to address this need.

CHAPTER II

PROBLEM IDENTIFICATION

Problem Statement

Studies of archetypal informal housing and squatter settlements often stresses the necessity of providing the poor with basic needs housing, regardless of the consideration of social and cultural influences (Harms 1972). The significance of such aspects is emphasized both in formal and informal settings, as explained by different studies, particularly Rapoport (1976), who explained that the built environment is considered a record of culture, beliefs, and behavior.

In Texas Colonias, these decisions are highly important because of the informal nature of the communities, who make decisions concerning their informal housing form and production. Their decision is usually influenced by two different environments: past and present. This research analyzes the influences of both the social and cultural aspects of the residents on housing fronts in Colonias, which are derived from their experience in these two environments. The analysis mainly includes the exploration, through documentation, of selected elements of house fronts that entail great social values to the residents (such as Porches, fences and gates). These elements, among other elements, represent a measurement of vernacularity of the house because of their significance in determining the traditional settings as explained in different literature. House production methods, a major factor affecting informal housing because of its self-help nature, are also investigated in the study. Additionally, the elements composing house fronts are classified into two major themes: one that reflects the traditional environment and the other interpret the absent elements from the traditional environment. These themes can be considered as a representation of the two opposing influences on the immigrants' communities, their past and present environment.

Research Significance

This research contributes to different cultural-related studies of the U.S.-Mexico borderlands. Its significance is enhanced by the following: 1) it is concerned with the Mexico-U.S. migration, which is an

intensive source of newcomers with their unique customs and culture, particularly in Southern Texas and therefore affects the future of the border region; 2) it provides a model for informal housing documentation on sociocultural basis, which is barely addressed in Colonias studies according to Ward (1982). This process is considered in light of Rapoport's studies of environment/users mutual interaction and can be transposed into effective policies for informal housing development and provision in the region; and 3) it provides an analysis for the social structure of Colonias as a transitional community. This analysis will benefit residents, housing organizations, housing trusts as well as the non-profit sector (e.g. proyecto azetca self help housing, and border low income housing coalition).

Housing Model

The vital relationship between man and built-environment is an essential basis for the hypotheses tested in this research, and it was stressed in most of the classical references such as Turner (1968, 1972, and 1976), Rapoport (1969 and 1976), and Rapoport and Hardie (1991). In this regard, describing Geddes and Bertalanffy housing model, Turner (1976) emphasized that the good built environment is not necessarily one of high physical standards, which leads to the emphasis on the representation of residents' customs and identity in house design and production, particularly in the self-help housing of informal settlements. The diagram explaining this theory -as shown in figure 1- described three major factors contributing to the comprehensive housing model. These factors have a relationship that ties them, which is represented by an "organism-Function- environment" relationship. The organism/or actors are the decision makers regarding housing design and provision; the environment/ or achievements are the housing they produce, which is achieved through the media/ or function of their customs and responsibilities/activities.

Applying this model on the process of housing design and production in the Colonias as an informal setting, the "organism" can be represented by the residents who make the decisions of their houses as of self-help approach; and the "achievements" can be represented by the housing they produce, which they accomplish through the media/function of their social and cultural values that inherited from their past environment and influenced by their present environment.

Additionally, as this research focuses on the analysis of Colonias house fronts, this model reflects the significance of residents' influences on house fronts. These influences were caused by their past context (home town traditional milieu), which represents the *core* elements, and their present context (Colonias of the U.S.-Mexico border milieu), which represents the peripheral *modified* elements producing the modification of the traditional features (Rapoport and Hardie 1991). Because the Colonias' residents are experiencing the impacts of both core and modified environments, this research investigates the effect of these two influences on Colonias housing fronts, built through the self-help model.
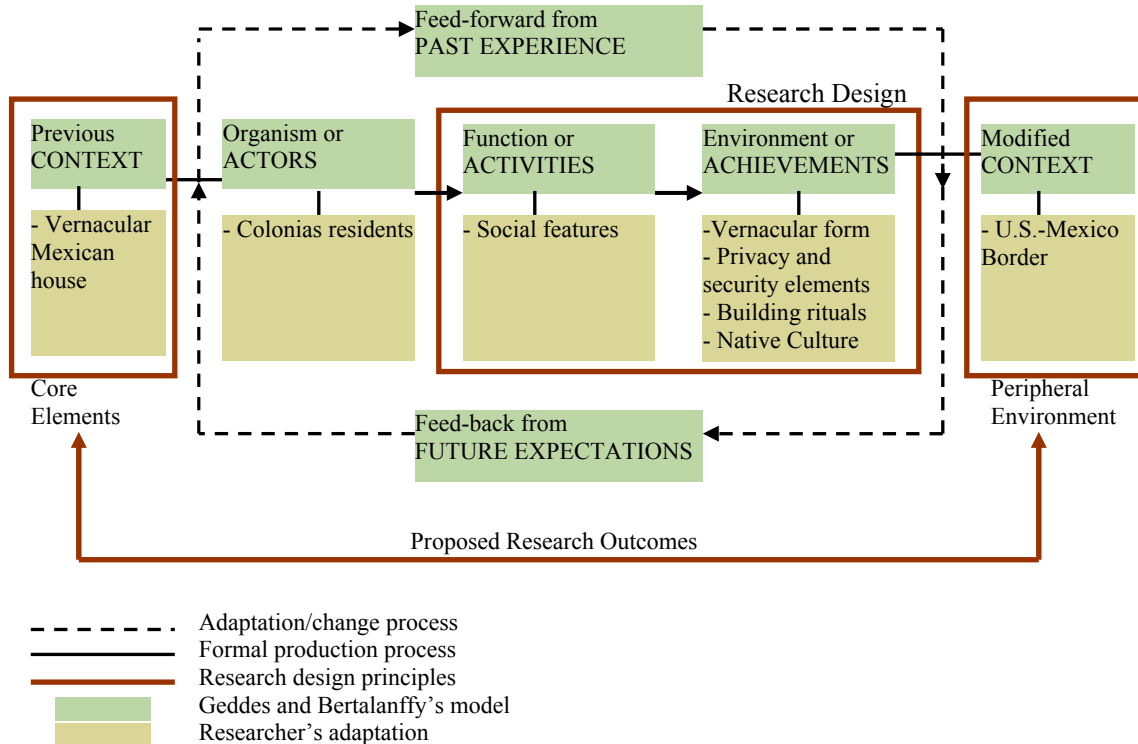
Fig. 1. Impacts of previous and modified context on housing as a product.
Source: Adapted from "Geddes and Bertalanffy's housing model" described in Turner (1972)

Housing Morphological Themes
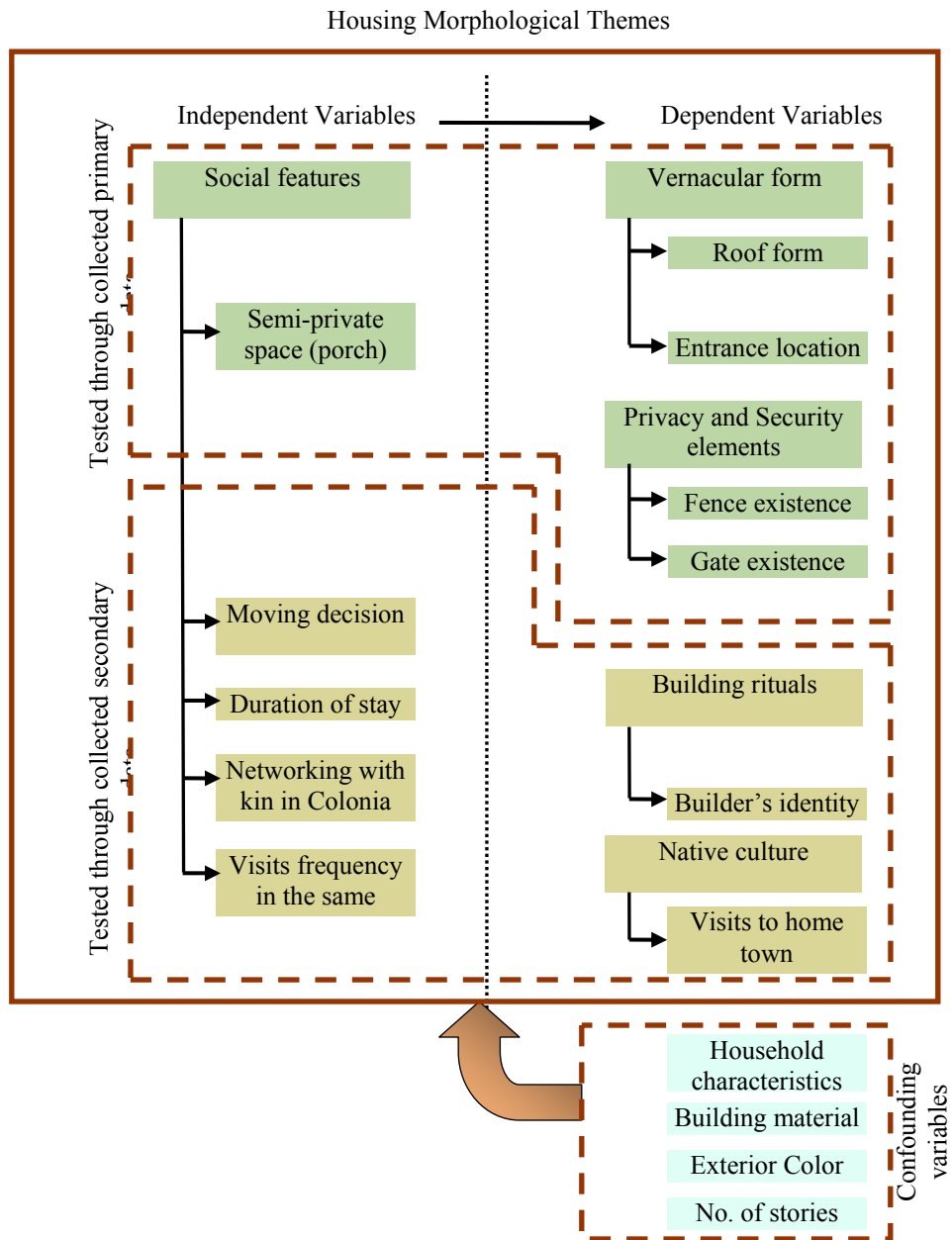
Fig. 2. Research design for testing housing morphological variables in Colonias

Research Objectives

The purpose of this research was to analyze the social and cultural inference of themes incorporated in housing fronts in Webb County Colonias and to classify them according to: 1) their relation to the

residents' traditional environment (home town milieu); and 2) their relation to the residents' present

environment (U.S. border milieu). To achieve this, the study aims to accomplish the following enabling

objectives:

- The identification of the morphological themes of housing fronts in the Colonias;

- The exploration of the aspects of social identity[1] of Colonias' residents; and

- The categorization of the social inference of house fronts elements and the relationships among

  these elements.

Research Hypothesis

This research tests the hypothesis that *housing fronts in informal settings -represented in this study by*

Colonias house fronts- provide an indication of the preserved and absent features of the residents' home

towns. To test this hypothesis, the research design, explained in figure 2, illustrates the investigated

independent and dependent variables, their measurements, and the relationships among them as explained

in the following sub-hypotheses:

First Hypothesis (H1)

Gable and flat roof are identified as the most common traditional roof forms in Mexico, where the

majority of Colonias' residents descended from. Gable roofs are described by Shipway and Shipway

(1960) as the most utilized for the protection it provides against the rain, while flat roofs are commonly

used in rural areas in Mexico as described by West (1974). While roof forms can be considered as an

indicator for the vernacularity of form, the utilization of semiprivate space (porch) can well represent the

resident's traditional identity for its reflection of the need for socialization outdoor space, in addition to its

role as a buffer. The first hypothesis (**H1**) states that there is no relationship between the utilization of

semiprivate space (porch) and the traditional roof form, that was used in the houses of the residents home

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[1] Based on Berger and Luckmann (1967, p.174), "identity is a phenomenon that emerges from dialectic
between individual and society". It is shaped by social processes and can be maintained, modified, and
reshaped; it is also determined by the social structure.

towns. Therefore, rejecting the hypothesis would, therefore, indicate a stronger preservation of vernacular forms in house fronts.

Second Hypothesis (H2)

In the immigrants' communities, the significance of identity/or social recognition increases as they contribute to formation of the place-identity. This theory was underlined by McBride and Clancy (1976) who emphasized the significance of "privacy" and "security" as the two values involved in the creation of identity. Identity can also be indicated in the traditional sequence of spaces (Lawrence 1989). The clearest example of this sequence of spaces is the porch, which acts as a semiprivate space buffering the "secluded/private" spaces from the "public/anonymous" ones (streets and open spaces). The need for this buffer would be more emphasized in traditional communities than modern ones. These theories lead to the second hypothesis (**H2**) which states that there is no relationship between the existence of privacy and security elements (fence and gate) and the semiprivate space of the house (porch). Rejecting this hypothesis indicates the preservation of the traditionality of different elements of house fronts.

Third Hypothesis (H3)

Several factors, associated with the production of housing, have major impacts on the pattern of housing production in informal settings. These factors include builder's identity, kinship role in house construction, and construction phases of self-help house (Turner1972, Spears 1986, Briody 1989, Holston 1991), these factors lead to the third null hypothesis (**H3**), which states that housing production and builder's identity have no relationship, and the production of Colonias housing and kinship among the residents are not relevant. Rejecting this hypothesis confirms that kinship and builder's identity have a major impact on house production in the Colonias, which is a major part of informal housing components.

Fourth Hypothesis (H4)

The theory of place-identity explained by Proshansky et al. (1983) emphasized the impact of the past and present factors related to residents' life on their present houses. As the past of Colonias' residents is

derived from their native culture, preserving this culture –according to the theory of place-identity, would be expressed in their current houses. Additionally, the duration of stay in the new house has a significant effect on migrants' life and their built environment, as explained by Turner (1972). From this standpoint, resident's interaction with Anglo society and the duration of being away from home towns may have had different impacts on changing residents' cultural and social customs, which in turn shaped their houses. Therefore, the fourth hypothesis (**H4**) states "there is a relationship between the networking with home towns, and the duration of stay in Colonias". Rejecting this hypothesis would indicate the continuing concern of the residents with preserving their native culture regardless of their time away from their hometowns.

CHAPTER III

LITERATURE REVIEW

This chapter reviews housing morphology in informal settlements through different levels: A general review of the nature of informal settlements was essential to understanding the unique characteristics of such milieu. Then, the review focuses on Colonia as a U.S case study of informal settlements. The chapter then explores the built form, the characteristics of housing and the self-help approach in informal settlements, particularly in Colonia to determine the significant variables affecting housing in these settlements. Finally, different dimensions and influences on morphological aspects of housing in informal settlements were stressed.

Nature of Informal Settlements

Although, they were quite distinct, both informal and squatter settlements are subject to the classification provided by Burgess (1985) of low-income settlements. The different methods used to classify such settlements, which comprise both formal and informal housing, were explored in a study of low-income neighborhoods in Latin America that identified three methods of classifications: 1) classification based on form of housing production; 2) classification on the basis of material/physical condition of housing stock; and 3) classification based on legality/illegality basis.

On the other hand, most of the literature concerning the spontaneously evolved settlements either outside city periphery or on the undesirable lands used different terms to explain the settlement form or status. In this regard, the literature identified two sets of classifications: first, a classification that refer to the settlement as a whole; and second, a classification that refer to the housing characteristics in the settlement. The first classification identified three ways of defining the settlement: 1) According to its illegality, it was named the unauthorized (Ward 1984), illegal (Ward 1999), squatter (Varley 1989, Ward 1982), or uncontrolled settlement (Connolly1982); 2) Regarding its physical characteristics and planning, it was identified as irregular (Ward 1990), unplanned or marginal settlement (Ward 1982); and 3)

According to its form, it was named as self-generated and spontaneous settlement (Ward 1982). On the

other hand, the second classification identified the housing in the settlement as informal (Baross 1983,

Ward 1990), popular (Baross 1983), or squatter housing (Connolly 1982). In addition to these

classifications, the next section provides an investigation in the definitions, and evolutions of spontaneous

settlements.

History and Evolution of Spontaneous Settlements

Although, there is a strong distinction between the squatter and informal settlements with regard to

the illegality of land ownership and the process of land invasion (Serageldin 1990), this section will stress

other aspects of informal settlements by comparing them to the squatter settlements because of the

similarities of these aspects. From this view, and described as the enemy of the home (Riis 1970), the

slums were inhabited by squatters who left their home towns with some of their belongings. The case

study of Peruvian migration provided an insight about the evolution of such settlements, through which the

new settlers –mostly groups of very low income families – move to lands outside the cities, with no active

enforcing laws from the government. The general pattern of the settlements, formed by these movements,

evolves on a vacant plat owned by the government or developers and located outside city skirts, or in

unattractive plots inside the city, where there is no active governmental opposition on it (Mangin 1967).

The simplicity and illegality of gaining the land, in addition to the kin assistance, attracted more

squatters to move to the new settlements, to which people, from farms or small towns, moved with some

materials for strew house construction, their country's flag and their belongings (Mangin 1967).

As shaped and created through different movements of migration, the settlements were labeled as

spontaneous and complex. The case study provided by Ward (1984) for the unauthorized settlements

growth in his study of Mexico City, stressed the complexity of the process of formation of such

settlements. In his analysis of the settlement growth, he described the following three ways by which the

unauthorized –informal- settlements were created: 1) land is sold by interested agents (land-developers as

in the Colonias, vote-catchers, radicals, or other politically-involved people) who sell it as illegal

subdivisions on marginal lands with inadequate services and infrastructure; 2) land invasions occur less

frequently and are driven by political reasons or the poor needs for home and land ownership; 3) land in

sold by illegal contracts to the new land invaders, through which they have the right-of-use; however, the

land transfer occurs after the last payments (Ward 1984). In addition to their complexity, the settlements

were described as chaotic and unorganized, the nation economic drain, a place of drug addiction and

crime, non-participants of the city, and poorly educated. However, they not only grow, but also improve

over time (Ward 1982).

Sociocultural and Economic Characteristics

The definitions and the processes of formation of spontaneous settlements introduced some of the

aspects of their characteristics that will be discussed in this section. For instance, the dramatic increase of

the migration movements resulted from the ongoing growth of cities in the nineteenth century, caused

deterioration in low-income settlements, which had a negative impact on poor settlements and increased

their residents suffering in terms of health, education, housing and infrastructure problems (Cohn 1979).

In spite of this deterioration; there has been a great representation of the settlements social association

in several anthropological, sociological and housing studies. Several studies showed that individuals in

squatter settlements produce a social order that is well described by the terms "norm" or "role" (Suttles

1968). Both terms are portraying people in the same neighborhood, peers, or –in general- to pedestrians

regardless of their backgrounds and past performance (Suttles 1968). These norms –constituting the

community identity-evolved overtime creating the community social association from two main sources

identified as "kinship" and "neighboring", which have a great impact on the individual and groups

networking and information transfer in such informal milieus Cohen (1982). Also, the following two

factors were explained as promoters of the information network among residents: 1) "kinship", which

plays a major role in building extensive strong ties; and 2) "acquainted children", who enhance the

relationship and trust between different families, even of different ethnicity. Regarding the norms creating

the identity of interaction in the slums, formal gatherings, prearranged visits, and advance invitations are

considered uncommon ways of communication (Suttles 1968).

In addition to the "norms", there was another dimension of the societal values' influencing housing. In a study of Mexico City, Ward (1990) explained that housing demands, which are function of the society, are formed by maintaining the norms and customs of a number of socio-cultural aspects such as: marriage age, ownership ideology, population increase, percentage of construction expenses in relation to the household income, financing and current housing purchase availability. Besides the social aspects of the settlements' norms, another study emphasized the community values in the characterization of the shortcomings of unplanned settlements, which entailed the self-help approach, the hybrid forms, the low rise profile, and the reflection of vernacular traditions in the produced housing (Serageldin 1990). To conclude, the family and community effect on informal and squatter settlements was great, and the family –in most cases was nuclear, bilateral with resident fathers- and kinship are the source of support and the provision of crisis insurance to the newcomers and their existing kin (Mangin 1967).

In addition to the social aspects, the contribution of such unplanned, whether squatters or informal, settlements to the national and city economy is enormous. This contribution takes the form of the independence on the government's support in affordable housing solutions. According to Mangin (1967), millions of settlers in the unplanned settlements have already find a solution to their housing problems without seeking and depending on national governments, which stood hand-tied in facing such severe problem. In addition to the poor conditions of the shelters constructed when the new settlers arrive to the settlements, they stay for many years before they can consolidate their lot and construct their houses, which usually start by small shacks or trailers, to set up a secured future for their children (Turner 1976).

Characteristics of Housing in Informal Settings

As addressed in the preceding section and declared by the U.N, the deterioration of the built environment, particularly regarding housing conditions is ongoing (U.N. Economic and Social Council 1973), which flourished the formation of slums as confirmed in the statement that "housing shortages worsened and slums proliferated throughout the 1960s" (Serageldin 1990, p. 50). Acting in response to this, and due to population growth, urbanization, and immigration trends and slums expansion, low–cost housing became a high priority in all countries (Goodman 1979). However, the effective response from the

governments and their role as sponsors for low-cost housing was doubtful (Goodman 1979). Turner (1976) criticized that role by stating that the publicly sponsored low-income housing schemes have high construction and management costs, which has proved to be at least double those built by informal sector, a fact that justifies the informal housing –and squatter settlements- as the solution for this obstacle.

The poor households were seeking a solution to this problem and found the most practical and affordable one by squatting and residing in the informal settlements, which in addition to their practicality, they provide a traditional housing with the characteristics described in the following statement: "Informal housing is a hybrid integrating contemporary technology [that entails] new form and reinterpreted traditional elements. It can be bland, awkward or whimsical, but it is always rational, practical and expedient" (Serageldin 1990, p. 72).

Notwithstanding, housing in squatter settlements is temporary and, built upon the first occupation of the land that described by many authors as a process of invasion, as years go on and stability of the residents accomplished, residents put most of their capital in constructions that takes many phases along the years to be completed. This type of housing was built over a long period of time with heterogeneity in the housing production forms that is usually generated by "self-help", particularly as a traditional family-based product (Burgess 1985). The family and kin provide the assistance in construction; in addition, kin provide a free residence by sharing their lots with the new migrants.

Accentuating the strong representation of vernacularity in housing form and production in informal settings, Rapoport and Hardie (1991) provided evidence of the effect of the cultural aspects on the built environment. In their study of the *Tswana* tribes, they explained the possibility of distinguishing housing elements that were inspired by the users' traditions from those newly-adopted ones. They also stressed that the cultural effects on the built environments can be classified into two types: 1) core elements; and 2) peripheral environments, which include the disappearing elements that have been replaced by the new adopted ones. They also emphasized the need for a supportive environment that involves both, which was elaborated in the observation of the scheme of spontaneous settlements that was described by their ongoing change, and the conflict between traditional culture of the core elements and newly adopted elements by the builders and users (Rapoport 1988). This conflict was the basis for another argument by

Serageldin (1990) against the similarities that may appear of forms and symbols of the informal housing that will be elucidated in the next section. To advocate this thesis, Serageldin stated that:

> The array of physical elements, proportions, motifs and colors give a distinctive regional identity to informal housing. [Also. the] combinations of visual elements created by builders and residents individualize every dwelling in a settlement (Serageldin, 1990, P. 72).

Housing Form in Informal Settings

In spite of the importance of form in investigating informal housing, a small number of literatures are dealing with in-depth analysis of the nature of house form Walker (2001). Informal housing scholars did not describe the informal house form as a major and central part of the discussion, but rather to be made in passing, as background material, or to elaborate specific points. The studies addressing the form among their discussions of informal housing focused on the fact that when a specific cultural group move to a new site and start building their houses, they –at first- become obliged by economic circumstances to produce house forms which do not conform with the cultural norms of the group, then gradually, they become capable of producing housing that represents their values and norms. A process that is explained in the following statement:

> The process of formal consolidation of informal housing is a gradual process of increasing the conformity of the elements of the built form with the urban housing norms. However, the production of informal housing is not the same as the production of other house forms in accord with the dominant housing norms. Rather, occurring as it does in a complex and contradictory social context; the earlier phases of the informal production of houses condemn the inhabitants to an erroneous social identity. In order to overcome the resulting social exclusion, it is proposed that the inhabitants of the informal houses incorporate elements of built form during the formal consolidation process which gradually allow them to use the form of their houses in order to communicate their identity as members of the urban society (Walker 2001, p. 22).

The importance of addressing the elements of house form does not only represent a response to the inherent human needs that symbolize shelter and protection, but rather that it deals with the needs that created and recreated within determined social contexts. Stressing this theory, several studies focused on the role of house form in responding to the social identity of the inhabitants (Walker 2001), particularly the self-help model of production. In addition, the case study of self-help housing production in Mexico City stressed the typical stages of construction, from the rapid production of a temporary tar-paper shack,

in the initial stages of occupation of the land, through a gradual, process of consolidation, with the construction of foundations, brick or block-walls and slab roof (Connolly 1982).

The incremental house is not just a physical form that fulfills community norms, but the object that utilizes those norms in order to express the social identity of its residents as being members of the broader urban society (Walker 2001). Also, the study of informal settlements in different developing countries stressed the eminent effect of culture and norms, which are revealed in both builder and client choice of motifs and colors (Serageldin's 1990). Therefore, the influences on house form are linked to the effects of cultural factors as the cultural change has a great impact on the form created by the settlers in their new settlement. In this regard, the new values of modernity, often direct towards a contradiction with traditional spatial organizations, house types, etc. (Rapoport 1988). Nevertheless, in the communities facing rapid change, people attempt to preserve the cultural identity, which signifies their cultural core. On the other hand, in some other studies, there was an emphasis on the embedded factors causing the variation of cultural patterns and house forms in some cases of contiguous cultural groups; however, they become integrated in some other cases (Walker 2001).

As an example of the sociocultural impacts, the utilization of the terraces, stairs, landings, and the buildings' entrances, and the alleyways is the solution for the problem of having large space for gathering that is necessary of friends and neighbors socializations. Accordingly, entrances, in addition to their function as a threshold separating public and private domains, they act the places for neighbors and friends chatting and entertaining (Serageldin 1990). However, there is a demand for security that enhanced the use of iron gates and fences, in addition to their durability. To pledge the same purpose, transition spaces integrated into the structure such as porches, walkways, terraces, and yards not only create a sense of privacy, but enhance the social interactions with other occupants within the settlement as well. Also, fences, doorways, staircases, landings, windows, balconies and parapets create varying degrees of enclosure and at the same time openness. Indirect entrances and permanent obstruction of the street view are omitted, and the refusal to be confined within the enclosure of a dwelling is well represented by the use of claustras, fences, parapets and screens (Serageldin 1990).

From the previous descriptions, it is well indicated that the outdoor features of informal housing work as significant indicators of the social association of inhabitants, which is well represented by street facades that are highlighted by decorating accents in balconies, entrance door and strips around windows (Serageldin 1990). This investigation places the foundation for the following section, which will add more details to the formation of informal housing by investigating Colonias as a self-help model of housing.

The Colonia: A Self-Help Settlement

Through this section, Colonias as a model of the informal settlements in the United States located along the U.S.-Mexico borderland will be explored. Colonias are non-static, decaying societies; however, they are vibrant, spiritually strong communities with development potentials (Davies and Holz 1992). The nature, history and evolution of these communities will be addressed; then will be followed by an analysis of the housing features and its self-help spontaneous construction. Also, the sociocultural aspects influencing housing will be addressed as follows:

History and Evolution

Starting by defining them, the phenomenon of Colonias on the North side of the US-Mexico border, which are the main focus of this research, is so recent and a little theoretical literature and research focused on them. While sometimes replicating the look of Third World slums, Colonias are distinct in a major aspect: the house and the lot are owned by the occupant, and rental housing units are little and the settlements comprise informal privately-owned housing rather than squatter residence (Davies and Holz 1992), a fact that was stressed to emphasize the major difference between Third World squatter settlements and these Colonias (Ward 1978).

Colonias are rural (Salinas et al. 1988, GAO 1990, U.S. House of Representatives 1990), quasi-rural or ex-urban (Davies and Holz 1992), or peri-urban (Ward and Carew 2001) unincorporated subdivisions outside U.S. cities located along the U.S.-Mexican border, in which the following conditions exist: substandard housing, inadequate roads and drainage, and substandard or no water and sewer facilities (Briody 1989, GAO 1990, Davies and Holz 1992, Patrick and Alonso 1993, THHSC 2002, HAC 2004).

The incorporated subdivisions are those containing five or more family dwellings that are not integrated within the units of local government (U.S. House of Representatives 1990). Colonias are named as invisible entities because of the difficulties of many people to acknowledge them (U.S. House of Representatives 1990). In addition, Colonias are portrayed as one of the region's ugliest sides, in which many features appear from outside as little more than shanty-towns suffering from substandard housing, infrastructure and depressing living conditions (Faulkner 1989).The definition of the Colonia from Colonias' residents and literature standpoints varied, but according to a study comprising the nature of Colonia, it was identified by its residents as an area in and of itself (Briody 1989).

Although, Colonias are scattered in both U.S. and Mexican sides, they are more concentrated along the U.S. side of the border, and have been referred to as a Texas phenomenon because of their concentration and severe conditions in Texas with few counterparts in New Mexico, Arizona and California (Davies and Holz 1992, OAG 1993). Border counties in Texas are more sparsely settled and rural than counties in the other Border States (HAC 2000).

The evolution of Colonias occurred in three ways: 1) Twenty five percent of them were established by groups of residents, who are farm workers hired by grower or rancher; 2) Another fifteen percent of them evolved between 1908-1948 as townsites by Anglo realtors; and 3) the majority of them started as residential subdivisions after 1948 (LBJ 1977). Also, as one of the catalysts for the crisis of population growth on both sides of the border, the North American Free Trade Agreement (NAFTA) contributed to the increase of the affordable housing crisis (BLIHC 1993), which created these settlements that not only have its unique characteristics as migrants settlement, but has also social, cultural, and economic characteristic that will be emphasized in the following section.

Sociocultural and Economic Characteristics

In Texas Colonias, Hispanics are over ninety seven percent of the population (Salinas et al. 1988), which created the sense of ethnic homogeneity between residents, who mostly moved there as farm workers (U.S. House of Representatives 1990). This homogeneity in the U.S.-Mexico borderland residents reflected how residents express their feeling about their culture, which was identified in two terms:

"differences" and "separateness" that were explained as the borderlanders premise of being different from people in the interior zone; and how they are perceived differently by the outsiders (Martinez 1994). This status created the feeling of separateness, which is also –in the Colonias case- referred to as cultural and geographical separateness as well that created social and economic isolation THHSC (2002). On the other hand, the argument against the homogeneity in the borderlands was mainly focused on the lack of homogeneity in South Texas between the Anglo and Mexican-American societies. As stressed in the same study, both Anglo and Latin lack the mutual understanding and respect for each other, which created a conflict between the two ethnic groups (Madsen 1964). And, as explained by Tienda (1981), The Mexican-born individuals are different from the Chicano.

This differences and separateness stressed the connotation of the debates about "cultural browning[2]" and its potential impacts on the creation of "political browning" in the border region (Fernandez 1989). This debate was confirmed by Gibson and Renteria (1985) who supported the ideology of the existence of Mexican identity by stating that the border region is still embracing the Mexican culture. This fact was underlined in Pereau's study (1993) of *Dos Aguas* Colonia in El Paso in which, the family was described as the provision of support and linkage with the larger society as well as the connection with the Mexican culture. The study has also underlined the role of the family in preserving the ideal Mexican traditions and the separateness from Anglos.

Conversely, the existence of a specific and distinct "border culture" in the region was discussed in other studies (Pena 1985). In addition, in spite of this separateness, border region contains a hybrid border culture that is culturally, linguistically, and demographically an extension of both Mexico, and correspondingly of the U.S. It is a borrowed, yet new evolved identity, of two distinct combined cultural worlds, with a society composed of Anglos, Mexicans, and, predominantly, Mexican-Americans. The impacts of the two mixed-cultures are significant to be addressed and the measuring of their impacts on house form will be addressed in following sections.

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[2] *Cultural Browning* resulted from the impact of migration from Mexico to the Southern states, particularly in the border region. There is a fear of causing political pressures, names as "political browning", regarding the country they will support (Fernandez 1989).

Adding to the characteristics of Colonias along the borderland, the region suffered several problems

that existed since 1960s, but because of the high rate of population growth -estimated as 30 percent in the

1980- the situation there worsened (U. S. House of Representatives 1990). Also health conditions in the

region are deteriorating: in some Clonias, residents obtain their potable water from contaminated wells or

irrigation ditches (Wilson and Menzies 1997). Moreover, 65% of the residents don't have health insurance

(U.S. House of Representatives 1990).

Characteristics of the Built Environment

As indicated in the preceding section, there are different problems the region is suffering from as

Colonias lack the basic utilities most of Americans have: road pavements, street lights, efficient drainage

system, curb-side garbage collection, and security (Wilson and Menzies 1997). In addition, residents have

no access to sewage system, but only substandard septic tanks and outhouses for waste disposal (Wilson

and Menzies 1997). One of the negative consequences of this problem is that they also build individual

wells that are almost 10 feet away from this outhouse, because of the tiny lots they were able to buy from

the local developers that are mostly sixty by ninety feet (U.S. House of Representatives 1990).

The above mentioned problems are considered as the common characteristics of Southwest villages, a

model of planning represented by Colonias. In this regard, the settlement typology is classified as the plaza

plan that was common throughout the Spanish American Southwest, and one of the four settlements

typologies identified by Conway (1952). Also, *Plaza* plan is often used to mean a country village, which is

described by Conway (1952) as being found more often in farm villages, both in Mexico and the

Southwest than in the larger communities. Conway also stated that irrigated land is so valuable in the

Southwest that houses, barns; even churches are located on the higher and less useful ground.

Housing and Self-Help Approach in Colonias

Following the review of the characteristics and problems of the built environment in Colonias, it is

essential to focus on housing nature which will be emphasized in this section as one of the biggest

concerns is to categorize housing typology in Colonias. To achieve that, it is important to address the

conclusion of 1996 report, which explored that by the year 2010; more than 700,000 people will need

affordable housing on the Texas side of the border (Chapa et al. 1996). Although affordability is essential

for the success of any housing developments in Colonias, Turner (1976) addressed the other user-related

cause of housing problems in the following statement:

> Housing problems only arise when the housing processes, that is housing goods and services and the way and means by which they are provided, cease to be vehicles for the fulfillment of their users' lives and hopes. (Turner 1976, p. 68).

Among other causes of housing problems in Texas-Mexico border region is the ongoing widening of

the gap between housing costs and what families can afford to pay for housing, which is growing rapidly

(Chapa et al. 1996). The increasing need for affordability is based on that housing cost in border cities

have raised dramatically over the past decade. There is currently a rise in the "gap" between what people

can afford and what rents are on the border. For instance, in Cameron County, the percentage growth in

households paying unaffordable housing costs rose 42% from 1980 to 1990, 23% in El Paso County, 67%

in Hidalgo County and 77% in Webb County (Chapa et al. 1996).

In addition, the impact of social characteristics of residents on housing typology was significant. In

this regard, approximately 13 percent of the border's housing units are mobile homes, compared to 8

percent nationally (HAC 2000). This high percentage is devoted to the nature of households and their

economic and demographic profile. The population increase that is accompanied by the wide gap of

payment capability/rent is caused by the North American Free Trade Agreement (NAFTA), which has the

potential for significant increase of the population on both sides of the border and the increase of the

existing crisis in affordable housing in the border region (BLIHC 1993).

Because of the nature of the communities in the border region, cultural attitudes in the region stressed

the desire for home ownership and self help efforts to construct homes. Accordingly, a call for an

adjustment in public policy housing programs to meet these demands is required (BLIHC 1993). As an

alternative policy, *Proyecto Azteca* –a self help non profit organization in Rio Grande Valley- illustrated

the self help, owner-builder model promoted by the Partnership. *Proyecto Azteca* was organized by low-

income Colonias residents of Hidalgo County who wanted to help themselves solving housing problems

(BLIHC 1993). The house, which is built through *Proyecto Azteca*, accommodates a family of seven, and

cost a family as low as one hundred dollars per month, is functional, efficient, durable, and meet all code requirements. The house designed under this program, meets all federal, state and local building standards and has a very low cost since it can be built for under $13,500. A house consisting of 3 bedrooms, and one bath, with an area of 720 square foot, is constructed by conventionally wood framed (BLIHC 1993).

Through the empowerment of local residents, the construction industry that takes place through *Proyecto Azteca*, is characterized by temporary and part-time workers. The training provided to those workers was significant and essential for the improvement of their skills. It is, therefore, perceived as being equally as valuable as the fact that their living conditions are improved significantly by the new homes. To reduce the cost required for training of construction workers, it was more effective to gather all the trainees together rather than scattered at different workshop training sites. Therefore, the process of housing construction, for the 700 Colonias located across Hidalgo County, usually takes place off-site and then houses are moved onto their permanent location on a truck. For the increase of the efficiency of the project, materials used in construction as well as power tools are purchased in bulk at a better price and are placed in central location (BLIHC 1993). Although, the housing units provided by *Proyecto Azteca* lack the representation of residents' identity since they are a prototype model of housing, the policies by which affordability is guaranteed provided a successful policy example against the current failure of pubic policies that will be addressed in the following section:

Deficits of Low-income Housing Policies in Colonias

On general, the governing class, and on particular the public administrators, should stop their old ideology and not to act unilaterally and effectively on behalf of the people, and to achieve a success in low-income housing provision, government impacts on development will be relative to its understanding of ordinary people's needs and its ability to work, not *for* them but *with* them (Turner 1968).

Focusing on Colonias, self-help housing in both Mexico City and Colonias was the way by which the residents overcame financial obstacles. This type of housing, from stake out to final completion, is rapidly constructed, and –in addition to the family investment basis included- it is a family cooperated effort. In addition, Colonias housing is generally built by the household head with the assistance of family and

friends (Davies and Holz 1992), and unlike Colonias on the Mexican-side, housing in Texas Colonias are self-managed (Ward 1999). Nonetheless, the role of the family is not limited to management, because this role, including children involvement, is to make cement blocks, dig, and transport building materials such as plywood, used lumber, and scavenged pipe and wire, the husband and his friends undertake the construction process (Davies and Holz 1992).

While this convenient method of production, and the affordability and the increment nature of the self-help model resulted in the opposing of the enforcement of building codes by the community groups because of their fear of demolition (Ward 1999), Connolly argued against the efficiency of the houses produced by these rules by stating that housing problems in a community like Colonias evolved from the hardship of building substandard housing units on legal basis on the North American building regulations. On the other hand, this opposition to the enforcement of the codes is shrinking because of the transformation of some Colonias -such as Rio Bravo and El Cenizo in Webb County- into the cities. This process as well as the affordability, policies and form related issues associated with housing provision in Colonias have not been intensively researched, which is the argument discussed in the following section:

Limitations of Colonias Housing Studies

Although, there are quite a lot of studies and research and that contributed to the production of low-cost housing units for the low-income people in Asia and the United States (Goodman 1979), research on Hispanic communities was mainly concerned with anthropological analysis of barrios life style and community organizing of the barrio (Muniz 1998). Also, sociocultural studies in the Colonias stressed the separation of the Mexican and Anglo identities, and rarely addressed their further influence on the built environment and housing.

On the other hand, housing issues in the Colonias, have barely been looked at from the morphology perspective as most of the research conducted in this concern was related to affordability, absence of owners (Ward and Carew 2001), strategic partnership approaches (BLIHC 1993). Also, some studies addressed the migration motives (Massey and Espinosa 1997, Jenkins 1977), the impacts on wage rates of illegal immigrants (Massey 1987), and its economic effects on domestic workers (Jenkins 1978).

Moreover, some of the agencies involved in the U.S Colonias' studies, research and development such as

HUD[3], TLIHC[4], BLIHC[5], DHS[6], and TWDB[7] extensively explored the deterioration of infrastructure, but

barely investigated housing form. Among these studies, Patrick and Alonso investigated the living

conditions in Colonias of Rio Grande valley, and provided a policy recommendation regarding housing

and infrastructure improvement. In their study, they recommended establishing *Colonia home mortgage*

company or *Colonia credit union*, which could provide a source of low-interest loans for financing home

ownership and home improvement for low-income people along the border (Patrick and Alonso 1993). On

the contrary, their study ignored housing as an object and the effect of the built environment on the

recommended policy; however, it stressed the need for more Colonias' housing research.

On the other hand, studies concerning the principal owner occupied housing initiative represent a self-

help owner-builder approach, which has been successfully implemented on a small scale in Lower Rio

Grande border counties by groups, as stated earlier, named *Proyecto Azteca* in San Juan, Mission Service

Project in Mission and Lower Valley Housing Corporation in Fabens (BLIHC 1993). Through this owner-

Builder approach, the alternative for the failure of public policies in housing, proposed qualified or

cooperating nonprofit organizations operated housing resource centers established in each county (BLIHC

1993). Regardless of the significance of policy recommendations addressed in this approach, the

morphology of the built environment, which has a great impact on the users, was not included as a factor

influencing the suggested policy. Therefore, the following section emphasizes the significant aspects

comprising the morphology of Colonias housing through addressing their broad influences.

Housing Morphology in Colonias

While many authors referred to the form as the tenure, rather than as a physical entity shaping the

residence, others such as Walker (2001), and Gilbert and Varley's (1991) thought that the impacts of the

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[3] HUD: The U.S. Department of Housing and Urban Development.
[4] TLIHC: Texas low-income housing coalition, a non-profit agency currently named Texas low-income housing information services.
[5] BLIHC: Border low-income housing coalition, a non-profit agency.
[6] DHS: Texas Department of Human Services, a state agency.
[7] TWDB: Texas water development board, a state agency.

sociocultural values, that are created and recreated in everyday life, are severe and important since they affect the house form. A study by Gilbert and Varley's (1991) stressed that these values are hard to change in the common settlements; however, in the migrants' settlements that include with heterogeneity of origins, the form of the house may be influenced by this heterogeneity which is expected if migrants brought with them different cultural patterns of housing. Another fact has been addressed by Gilbert and Varley regarding the nature of residents in such settlements. They declared the assumption that the majority (79%) of the inhabitants of the peripheral settlements is usually migrants, and perhaps it may be the case that a positive value towards home ownership is easily maintained, as it does not clash with the value system in the city. In addition, other values related to the physical aspects of house form, might however, be more changeable, if they clash with those found in the city in order to reflect their own traditional values (Walker 2001).

In Colonias, because of the extension of rail roads to reach the Southern states, different cultures affected housing morphology in the region as the time following the civil war. American, Greek and Victorian cultures existed in the region and affected housing styles (Spears 1986). Therefore, there are some similarities and differences regarding housing morphology in the Colonias both of Mexico and Texas, which was driven by the argument supporting the existence of a unique border culture in the region. While the differences appear in the lot plan area, which was in Texas larger than in Mexico, the similarities are represented by the house location in the lots. Trailers are usually located on right angle in their lots, while all forms of dwellings are set back from the road, parallel to the road, with main front doors (Ward 1999).

Characterizing the general profile of house form in Colonia, Ward (1982) explained the concept of *Ideal Home* which can be accomplished in many years of construction and used to take the form of an incomplete shack which relies on residents' surplus funds after obtaining the basic needs. Consequently, the *Idea home* for Colonias' residents provides a decent, affordable, and self-built shelter; hence fulfilling its residents' needs.

This brief explanation of some aspects of Colonias housing morphology introduces the following section, which not only summarizes the literature review chapter, but explaining the implications of the different literature concerning housing and informal settlements.

Summary

This literature review addressed the general features of squatter settlement; and its increment and formation illegality. Features discussed included community customs, social structure and economic aspects. The review also focused on the mutual influence between the settlements' core and peripheral elements, which emphasize the preserved and modified values that affect their current built environment. The review then offered a more close-up exploration of an example of squatter and unauthorized settlement through addressing Colonias evolution, self-help housing and the effect of borderlanders culture. Then, Colonias housing was discussed from different points of view including: difficulties of applying standard building codes; developing agencies priorities; and lack of research concerning housing form. Finally, some of the considerations for housing morphology in the Colonias, such as the lots proportions, houses/trailers layout, were discussed, the measurements of which will be elucidated in the next chapter.

CHAPTER IV

MEASURING TOOLS FOR HOUSING MORPHOLOGY AND

CULTURAL PATTERNS

Housing Morphology Measurements

The built-environment provides signs for the behavior and it has been referred to the environment as a nonverbal communication (Rapoport 1976). In this regard, a study by McBride and Clancy (1976) analyzed the impact of the built environment on identity, which enlightened the significance of some interior elements (e.g. walls and doors) in determining a person's privacy and security. Their analysis also focused on the environment's effect on the social behavior of the residents. Therefore, they identified the following morphological elements as the more affecting ones: walls, rooms, passages, open spaces, clutter and obstruction, movable screens and doors.

Beside that, the description of self-help housing in Mexico City provided by Ward (1982) identified the construction materials in Mexico City –mostly of cardboard and or asbestos roof and cardboard or un-mortared cement brick walls- as one of the significant housing features there. Also, the measuring tools for housing form provided by Spears (1986) in his analysis of Northern New Mexico stressed the number of rooms, their relative location with the courtyard, rooms shape (square and rectangle), housing form, outdoor arcades, materials, incremental phases, walls and doors cladding.

In addition to this, Spears (1986) addressed the hidden dimensions of housing morphology by looking at the local themes reflecting local culture and environment and affecting housing form. In his in-depth analysis of house form in Northern New Mexico, which identified 14 local themes, Spears (1986) confirmed Rapoport's (1976) notion of the differences of housing styles in the same environments and by using the same materials. Among the features he extensively addressed, Spears (1986) focused on a few main elements: number of stories, rooftop utilization and material, construction materials, tiling, opening shapes, floor plan and architectural details.

On general, housing morphological parameters identified by literature concerning housing typologies and form analysis includes: 1) Barriers (fences and gates); 2) roof form (Rapoport 1976, Connolly 1982, Aymonino 1985, Spears 1986, and Walker 2001); 3) color of roofs and wall; 4) doors styles; 5) windows shapes and treatments (Rapoport 1976, Connolly 1982, Aymonino 1985, Pereau 1993, and Walker 2001); 6) porches, hearths, and patios availability (Rapoport 1976, Aymonino 1985, Spears 1986, Pereau 1993, and Walker 2001); 7) house increment phases (Turner 1972, Connolly 1982, Spears 1986, Briody 1989, Holston 1991, and Pereau 1993); 8) house builder(s) (Turner 1972, Spears 1986, Briody 1989, Holston 1991); and 9) materials.

The literature on vernacular architecture in Mexico suggests that there is such a set of characteristics that formulate rural housing among the diversity of house types. This set includes: 1) the use of predominantly organic building materials; 2) the limited internal division of space within the house; and 3) the non-existence of formal services, specifically sewerage and electricity (Walker 2001). In addition, the Mexican-American housescape -described by Arreola (1988)- is a complex of elements including property enclosure, exterior house color, and yard shrines. Also, the Southwest Mexican-American landscape included different patterns focusing on the so-called "Mexicannes". These patterns comprise the following parameters: 1) the continuous extent of the front property enclosure through a variety of fence types, 2) the use of brilliant colors on house exteriors, and 3) an occasional religious shrine in the front yard (Arreola 1988).

Cultural Patterns Measurements

To measure the immeasurable variables such as quantifying the measures of human socio-cultural values, one should substitute this process with the premise of matching the individual needs (Schumacher 1974). In housing measurable and immeasurable issues, Turner (1976) stressed that the vital needs are related to matching the physical aspects, such as location and access to people and places, with the non-physical aspects such as "tenancy and transferability", and "privacy and comfort". For security and privacy considerations, most of Colonias households tend to protect their boundaries by fences or walls (Ward 1999).

In addition to the social considerations, cultural influences signify housing styles. Generally speaking, in the U.S., the Southern states region witnesses the influence of different cultures. In his analysis of housing in the Northern New Mexico, Spears (1986) concentrated on the significance of the effect of several cultures on housing as a product. Housing elements analyzed in that study showed their inspiration to be based on Hispanic culture, which is linked to Rome, North Africa and Christian Spain, and the American influence. Among the factors identified by Arreola (1988) that affecting housing style and housescape are the different cultures and religions existed in the setting. In this regard, he stated that in the Sixteenth Century, the transfer of structural forms from Spain to Mexico resulted in the transfer of various cultural traditions. For instance, courtyard housing has considerable antiquity. However, the enclosure pattern in Mexico is noticeable to Iberia, and the evolution of the Spanish townscape. Roman, Christian and Islamic heritages in Spain appear to have their prints on the practice of house enclosure.

To conclude, the literature addressing different informal settings emphasized the following variables as major sociocultural aspects integrated with house design: 1) move-in time and motives (Ugalde 1974, and Flores 1992); 2) country/town of origin; 3) Kin networking and moving promoters (Flores 1992, Pereau 1993, Briody 1989, and Ugalde 1974), and visits notifications (Lewis 1960, Suttles 1968, and Turner1972); 4) neighbors networking (visits and hosts); 5) family characteristics :type, size, and English-speaking skills (Berger and Luckmann 1967, Pereau 1993, Fernandez 1989, and Briody 1989); and 6) networking with home town\village (Lewis 1960 and Walker 2001); 7) ownership vs. rent (Turner 1972, Briody 1989, and Flores 1992).

CHAPTER V

METHODOLOGY

Introduction

This chapter explores the different stages of selecting and applying the method, which started by identifying the appropriate setting, and selecting the study population. Then, general explanation of the nature and obstacles facing researchers while conducting their fieldwork was explored, and the relationship between researcher and researched were stressed. The selected method, concurrent triangulation approach [8]of two methods was introduced (Tashakkori and Teddie 1998, and Creswell 2003), which includes image-based research and survey questionnaires. Applying this approach was then discussed from different standpoints: data gathering; sampling, which included systematic random sampling as well as community monthly gatherings; and data analysis. This analysis of data gathered from the empirical research included coding of each type of data, and two stages of analysis (data comparisons, and variables testing). The following is an explanation of the stages of applying the research method:

Site Selection

The population of the counties along Texas-Mexico border has experienced explosive growth from 1990-1994. While state growth rate was 8% during these four years, border counties grew by an average of 15% (e.g. Hidalgo County grew over 20% and Webb County grew at 22.4%) (Chapa et al. 1996). This population growth increased not only the deterioration of the built environment, but the substandardization of the housing conditions as well. In addition to its higher than average population growth, Webb County was selected because of the following factors: 1) The County, involves the city of Laredo, located on Rio Grande river which is a major access to the United States[9], and it connects I-35 with the major highways to

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[8] *Concurrent triangulation approach* is used when a researcher uses two separate methods (quantitative and qualitative) in order to confirm, cross-validate, or support findings within the same study. It is an effective tool by which a researcher offsets the weaknesses of one method with strength of the other method (Creswell 2003, p. 217).

[9] Appendix A shows this region as the major source of migration movements into the United States.

South America (Ward 1999); 2) the city also is home to the College of Architecture's regional center for housing and urban development, CHUD, the involvement of which as a facilitator for the field access was vital compared with the conditions in similar settings; and 3) the CHUD regional center was the closest anticipated facilitator to the original location of the researcher, i.e. Texas A&M in College Station, which was a significant time and money saving factor. Additionally, in Webb County, three Colonias (Larga Vista, Los Altos, and Rio Bravo) were selected for other criteria that will be discussed in the following section, which will also pinpoint and explicate the characteristics of the study population:

Selection of Study Population

As the argument of this research focuses on the impacts of nonphysical aspects (e.g. social and cultural) on the components of house fronts in the selected setting, the study population was identified as the houses in the Colonias of Webb County, TX and the house front was selected as the unit of analysis of this study. The data gathered from the three selected Colonias (Larga Vista, Los Altos, and Rio Bravo) focused on selected components of house fronts, which were related to the variables identified in the problem statement. The selection of these three Colonias was based on their geographic location, population size, availability of basic utilities, and the existence of community gathering places where the possibility of meeting with the residents were achieved.

The significance of each of these selection criteria could be explained as follows: first, the geographic location assured the representation of the following variations in Webb County Colonias: 1) *Larga Vista* located on Highway-359, attached to Laredo city fringe , and therefore could be an indicator for the impact of urbanization and higher living standards of the city on Colonia housing; 2) *Los Altos* – located on the same Highway- but far from the city limit, which decreased its prospects for any development from the public sector (Ward 1999); and 3) *Rio Bravo* –located on Highway eighty three- sixteen miles south of Laredo, is a large Colonia with respect to its remoteness from the city. Second, population size is considered an essential factor for establishing and maintaining place-identity (Proshansky et al. 1983), and was taken into account to assure the variation and representation of the selected communities. Third, basic utilities standard availability can be considered as an indicator of the quality of life. Applying this

criterion, *Larga Vista* in spite of its small area, was selected because it has water, wastewater, garbage collection, good-quality street paving, and gas lines (TDHCA 1999, and Ward 1999). While, *Los Altos*, was selected because it does not have water or wastewater, Rio Bravo, a large Colonia by Texas Standards, has water, paved streets, garbage collection, and some public street lighting (TDHCA 1999, and Ward 1999). Finally, the availability of community centers was necessary to facilitate researcher access to the community. Accordingly, *Los Altos* self-help center and *Rio Bravo* community center played a major role not only in hosting the community gatherings, but in providing assistance during the conduct of fieldwork as well.

Fieldwork: Nature and Obstacles

Entering the Community

As explained earlier, conducting the field work and living in the community was the major challenge for this research. One of the most difficult stages of which was getting entry to the setting, which was referred to by different literature (e.g. Bailey 1987) as problematic for its need for legitimizing the researcher's existence in the filed. The process of gaining entry was not only problematic, but frustrating as well. A frustration caused by the delay in gaining access for over two month. These difficulties were similar to those faced by other researchers (e.g. Muniz 1998).

The field work included an initial exploratory visit facilitated by the regional coordinator of Texas Health and Human Service Commission *THHSC* in Laredo. During this exploratory visit, two informal interviews with the community centers' directors of *Larga Vista* and *Rio Bravo* were conducted. Establishing this communications with state organization, however, subsequently created several problems in establishing "access" to the community for conducting the fieldwork, which categorized the community as a "difficult setting". To overcome this problem, the facilitation of the College of Architecture's officials, the executive associate dean and the interim director of CHUD at TAMU, was sought. This type of facilitation was highly recommended by different methodology literature (e.g. Bailey1987). This literature stressed that the researcher must have some affiliation (e.g. with University or research institution) that legitimizes his/her entry and provides a reason for conducting the study. The facilitation

provided by TAMU officials resulted in another longer visit to the field, which was sponsored by the

College of Architecture Research and Interdisciplinary Research "CRIC" grant. The facilitators, not only

introduced the researcher to CHUD-regional director, but also coordinated the timeframe for the research.

Researcher and Researched Relationship

Broadly speaking, being involved is important and there are dangers in remaining too detached as an

outsider. To avoid being too detached, Foster recommended that: "The researcher should [therefore] make

a balance between the role of being an insider and outsider as well as benefit from the strength of both

situations" (Foster 1996, p.70). Achieving this balance in the Colonias was however difficult because of

the obstacles associated with the researcher's entry to the setting. Her entry problems were driven from her

stance as an "outsider" seeking admission to a difficult sitting, a status explained by Lofland and Lofland

(1984) as the most problematic process in the fieldwork that was caused by the sensitivity of the

community towards the outsiders. The sensitivity was partially caused by negative impression resulting

from previous research activities in the area.

In response to this, the involvement of the researcher's institution established a basis of trust with the

regional representatives –community center directors- in the site; a process which eliminated any existing

mistrust towards the researcher as an outsider and the activities incorporated in the fieldwork.

Additionally, the researcher's casual outfit and her participation in lunch meetings with *promotoras* and

volunteers were among the factors facilitating the researcher's blending into the community, which

followed the guidelines provided by Foster (1996). This friendly setting created a good communication

basis and sociable environment with the researched communities, whose input and advices were as

important as their efforts in administrating the survey forms.

Regarding the survey administration, Rio Bravo community center director provided his advice to

achieve an accepted response rate through distributing the survey forms in the food bank event held in the

center each month. Additionally, he recommended offering some community incentives such as holding a

raffle. Also, the program coordinator of CHUD regional office in Laredo recommended offering some

gifts in the form of small kitchen appliances; therefore, six small kitchen appliances were awarded to three

members of the community selected by the raffle in each of the two survey locations: Larga Vista self-help

center and Rio Bravo community center. In these two centers, volunteers from each community assisted in

administrating the survey forms, conducting the raffle, and distributing the incentives. The volunteers and

promotoras's assistance played a major role in organizing the fieldwork and gathering the research data.

Data Gathering

Mixed-Methods Approach

The fact that all methods have limitations encouraged researchers to think of naturalizing or canceling

the biases inherent in any single method by combining different methods. This mixed-methods approach

is useful to gain the best of both quantitative and qualitative approaches (Creswell 2003). In addition, one

of the major strengths of mixed methods is that evaluators can flexibly use or adapt the two types of

methods -quantitative and qualitative- to meet evaluation needs. Mixed methods are particularly useful

when the evaluation is supposed to deal with trade-offs (Greene and Caracelli 1997).

There are three strategies of triangulation in the mixed-method approaches that were identified by

Creswell (2003). This research utilized only one of theses strategies named "the concurrent procedures

strategy", which is shown in figure 3. Through this strategy, the researcher integrates quantitative and

qualitative data, which according to Creswell (2003) provides an inclusive analysis of the problem. By

applying this procedure on the data gathered during the Colonias' fieldwork, the researcher conducted two

methods: 1) the distribution of survey forms during the food bank events in Los Altos and Rio Bravo

centers, and 2) photographing house fronts in Los Altos, Larga Vista, and Rio Bravo (image-based

research). As the most common mixed methods model, the concurrent triangulation used in this research is

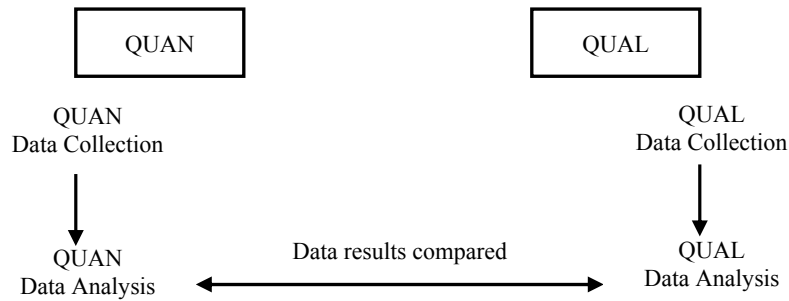an attempt to confirm, cross-validate, or support the findings.

Fig. 3. Concurrent triangulation strategy.
Source: Creswell 2003, p. 214

Initial Decision and Shifting of Roles

When the researcher utilizes two types of data, s/he needs to prioritize one of them, which will be considered as primary, while the other will be the secondary. In this regard, what is considered as primary or secondary depends on the interests of the researcher, and the audience for the study as explained in methodology literature (e.g. Creswell 2003, and Finnegan 1996). Also, studies undertaken by graduate students usually include a major and a minor form of data collection and analysis (Creswell 2003).

Throughout Colonias fieldwork, the survey questionnaires were considered the primary data in the initial stages of the protocol preparation; however, this decision was changed based on the recommendations of Rio Bravo center director with regard to the possible conduct of survey administration during the food event in the community center. This recommendation aimed at increasing the anticipated responses, which was predicted to be very low if a drop-off procedure was conducted. Consequently, house fronts' images were prioritized as the primary data because of the representation of the sample to the wider sample frame (housing units in the three selected Colonias).

Primary Method: Image-Based Research

Ball and Smith (1992) explained how feasible it is to translate images into words. These images, among other data sources (e.g. maps) are labeled as *documentary* (Finnegan 1996). Also, applying

systematic random sampling on pictures taken for Colonias house fronts makes the pictures an independent source of data (Colier and Colier 1990).

Image-based research has both advantages and shortcomings. Visual researchers generally take a more pragmatic stance than users of other methods because of the necessity of employing methods producing images capable of generating data that could be useful in the research (Prosser 1998). Also, utilizing content analysis avoids the researcher's effects on the data, the shortcoming of which is the involvement of issues such as clarity, underlying of content, and quantification (Ball and Smith 1992).

In addition, the concern of internal validity was taken into consideration by adopting the recommendations of Gaber and Gaber (2004), which focus on creating a relationship with the community. The researcher, therefore, was accompanied by a volunteer or a *promotora* from the community, which created a friendly environment for the residents whose houses were photographed. The other concern was that the technical nature of the photographs shows inaccurate relationships between visual variables as explained by Gaber and Gaber, which was eliminated by taking all the pictures from the same distance (approximately 25-30 feet from the front façade). The incorporation of systematic sampling also enhanced the external validity, which according to Sanjek (1990) focuses on the generalizability of observations to a larger milieu.

Data gathered by this method was used to test the first and second hypotheses (**H1** and **H2**). This data included the following variables: roof form, existence of a semiprivate space (porch), utilization of privacy and security elements, and the use of vernacular forms (entrance location, and roof form).

Secondary Method: Survey Questionnaires

Broadly speaking, some of the advantages of survey research method are that they involve the collection and quantification of data that is in theory cross-sectional, and can be used as a permanent source of information (Babbie 1973, and Bailey 1987). In addition, questionnaires are a highly structured method of data collection as are interviews. In Colonias' fieldwork, similar to typical survey methods, the researcher used questionnaires because they are cheap and practical.

The group-administered questionnaires used in this research were distributed during the food bank events held in three community centers. The group consists of the researcher, *promotoras* who work in the community centers, and local volunteers. Before the survey distribution scheduled day, recruitment flyers were sent to the regional CHUD office in Laredo, from which they were distributed to each community center. While the collaborative work in administrating the surveys expedited the distribution procedures, which took place in July of 2004, the human factor that caused differences of explanation provided to the residents by the group may have biased the responses as explained by Bailey (1987).

The questions, as shown in Appendix B and C, were derived from similar literature[10] that support the theory of house morphological elements as well as the nature of informal settlements, particularly Colonias' phenomenon,. The structured questionnaires consisted of three sequential parts: first, introductory data; second, sociocultural data which included the following measurements: 1) moving to Colonia, 2) relationships with kin and friends in the same/or other Colonia, 3) relationship with neighbors, 4) family characteristics, and 5) networking with home town; and third, housing issues which included morphological, construction, and property subcategories such as: 1) home town house front elements, 2) ways of constructing current Colonia housing, and 3) tenure status of current Colonias' housing.

Data gathered by this method was used to test the third and fourth hypotheses (**H3** and **H4**). This data included moving decision, duration of stay, networking with kin in the Colonia, building phases, builder's identity, and visits to home town,

Sampling

Systematic Random Sampling

In gathering the primary data, the researcher used a systematic random sampling for house fronts in three Colonias (Los Altos, Larga Vista, and Rio Bravo). This sampling technique, in addition to being more spread than a simple random sample, is more practical than random sampling as explained in different methodology literature (e.g. Bailey 1987, Sapsford and Jupp 1996). In systematic sampling, every *k*th element in the setting is chosen (systematically), and to insure against any bias from human

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[10] Appendix A provides the literature map for organizing the survey questions.

factor, the first element should be selected at random (Babbie 1973, and Kerlinger 1986). Because of the nature of the setting (Colonias houses), and the unavailability of a list of the sample frame (list or map for houses in each community), the random selection of the first unit of analysis (house front) was not feasible. Instead, the first house on the right side of the main street of each Colonia was selected as the first element.

The sample selection entailed only residential activities, and all other activities (e.g. coffeehouses, warehouses, etc.) were excluded from the interval count. The assistance provided by local volunteers and *promotoras* was a vital factor in verifying such activities. Additionally, as explained by Babbie (1973), two terms were used in the sampling process: 1) *sampling interval*, which indicates the standard distance between elements selected in the sample, was (k=5); and 2) *sampling ratio*, which represents the proportion of elements in the selected population, was 20% of the sample frame.

The interval, ratio, and total number of pictures taken in each Colonia are explained in table 1, which shows that there are two different samples were identified for pictures in Larga Vista Colonia. This is because of the existence of "Armadello development", single family housing units, which is adjacent to Larga Vista. In the process of data analysis, a few comparisons will be provided for these two samples including and excluding "Armadello Development" to measure the identified variables in them.

Table 1
Analysis of sample size of photos of each Colonia

Colonia	K	# of pictures	Total #* of houses
Los Altos	5	26	95
Larga Vista (including Armadello development)	5	67	N/A
Larga Vista (excluding Armadello development)	5	24	140**
Rio Bravo	5	126	1076

* Data based on documents of Texas Department of Housing and Community Affairs provided by local community.
** Number of houses was not available in this data base, so it was replaced by total number of lots.

Community Monthly Gatherings

The secondary method –survey questionnaires- utilized the non-probability sampling through the community monthly gathering. While the disadvantage of this method is the difficulty of claiming the

representation of the sample to the larger population as explained in a study by Bailey (1987), its

advantages include less complex, lower expenses, and possibility of conducting the survey on unstructured

and unplanned basis to enhance the anticipated responses at gathering places, and to avoid the complexity

of statistical methods. As an unstructured method, non-probability sampling was stressed in different

literature (e.g. Bailey 1987), and was even recommended by the Colonias centers directors. To conduct the

survey sessions, three food distribution events were used in administering the survey questionnaires. The

forms were distributed among the attendees in the following locales: 1) the community center of CHUD at

Concordhill, Laredo; 2) the self-help center of Los Altos; and 3) the Rio Bravo community center. The

forms were handed to the residents who agreed to participate, and consent information sheet was also

distributed. Also, local volunteers assisted the residents in explaining the nature of the research and the

survey questions, which were available both in Spanish and English.

    The total numbers of distributed forms, returned forms and response rate are shown in table 2, which

shows the very low number of distributed forms in CHUD center at Concordhill, which resulted from the

time conflict of food event at Concordhill center, and Los Altos Self-help center. Therefore, six survey

questionnaires, the total distributed at Concordhill, were excluded from the analyzed data.

Table 2
Sample size and response rate of survey questionnaires in each center

Site	No. of event attendees*	No. of distributed Surveys	No. of returned surveys	No. of filled-out surveys	Response rate (%)
CHUD-center at Concordhill	N\A	10	6	6	60
Los Altos Self-help Center	140	89	84	78	87.6
Rio Bravo Community Center	413	150	109	101	67.3
Total (excluding CHUD-center)	553	239	193	179	
Total		249	199	185	

* Number of food bank attendees in LA was determined from the sign-up list and by counting the food in-taking cards in RB.

Data Analysis

    To analyze the data gathered through the two types of methods used, coding techniques were utilized

to provide a way of documenting the measurement for each variable that will be used to test the

hypotheses. The two stages of analysis (data comparisons, and variables testing) are explained in the following sections:

Data Coding

Content analysis was used to code the primary data from the pictures of house fronts In addition to photographs, one can apply content analysis method to letters, diaries, ethnographic materials, newspaper articles and editorials, minutes of meetings, and so on (Kerlinger 1986). The advantage of this coding method is that it provides a systematic examination of materials that are more evaluated by generalization as explained by Babbie (1973). In addition, it is flexible with regard to the study and analysis of communications in a systematic, objective, and quantitative manner to measure variables.

In this research, the primary data from pictures sample of the three Colonias (Los Altos, Larga Vista, and Los Altos) was coded using content analysis, which, according to Ball and Smith (1992) includes the following stages: 1) identifying the categories of house fronts which were: roof form, porch existence, fence existence, gate existence, and entrance location. This identification is critical since the content analysis stands or falls by the categories (Berelson 1952); 2) determining some guidelines for coding each category. Roof form was referred to by a number (from 1 to 9) representing the types of roof forms identified in the survey questionnaire (shown in Appendix B and C); the porch and the fence were coded as "1" if they exists, and "0" if they do not exist (Ott and Longnecker 2001); and the front entrance was coded as "1", and the side entrance was coded as "0"; and 3) counting the frequency of each categories in the sample by counting the number of 1's and 0's in each category. Invisible variables were considered as not available during the coding process, and were referred to as "N/A". Figure 4 and table 3 provide an explanation for the included categories and the way they were coded. Following this stage, the data were prepared for statistical analysis through using bar graphs, pie charts, proportion (π) and standard deviation (σ) for each category.

Fig. 4. Sample of house fronts photos of Rio Bravo Colonia

Table 3
Content analysis used for coding house fronts data

Roof form	Porch existence	Porch location	Entrance location	Fence existence	Gate Existence
3*	1	F***	1**	1	1

* The roof "3" represents the traditional form of a "gable" roof.
** Location of entrance "1" represents a front entrance.
***Porch location (F=front) was not coded as 1 and 0 scale, because it was only used in the bar graphs.

On the other hand, coding the social features as well as the building rituals data gathered through the survey questionnaire was based on the measurement type. The variables measuring these features and their measurement types are shown in table 4. Then, coded data, which is classified as categorical data, was then prepared for statistical analysis through bar graphs, pie charts. Also the proportions and standard deviation of the responses of each question were calculated through as explained in Ott and Longnecker (2001) through SPSS Inc. (2003).

Table 4
A sample of survey responses showing the types of measurements

Category	Variable	Measurement Type	Question	Answers sample
Introductory data		Open-ended	Name of Colonia	Rio Bravo
		Open-ended	Householder age	75
Social features	Moving decision	Ordinal	How did you know about this Colonia?	a. from a friend/friends b. from our kin (circled) c. other (please specify)
		Nominal (contingency)	Do they live in this Colonia?	a. yes (circled) b. no
		Ordinal	What was the basis for your decision to move to this particular property?	a. to join my kin b. to join my friends c. to own a home that we can afford (circled) d. other (please specify)
	Duration of stay	Ordinal	When did you move to this Colonia?	a. less than one year ago b. one to five years ago c. more than five years ago d. other (please specify) (circled)
	Networking with kin in Colonia	Ordinal	If your kin/friends live in this Colonia, how far is their house from yours?	a. across the street from our house b. 5-10 minutes walking distance (circled) c. 10-20 minutes walking distance d. more than 20 minutes walking e. less than 15 minutes by car f. 15-30 minutes by car g. more than 30 minutes by car
	Visits frequency in the same Colonia	Ordinal	How often do you visit them?	a. once/week b. twice/week (circled) c. three times/week d. more than three times/week e. once/month f. twice/month g. three times/month h. more than three times/month

Table 4 continued

Category	Variable	Measurement Type	Question	Answers sample
Building rituals	Building phases	Nominal	Was this house that you are currently living in constructed in one stage?	a. yes b. no, in several stages
	Builder's identity	Ordinal	Who built this house	a. self and/or husband/wife b. kin assistance c. hired a local contractor d. other
Vernacular form	Roof form	Ordinal	Please check the one you had in your home town house.	1 2 3 4 5 6 7 8 Other
Native culture representation	Visits frequency to home town	Interval	How often do you visit your original home town/village?	a. once-twice/year b. 5-10 times/year c. several times/month d. other (please specify)

Stage I: Data Comparisons

    The nature of the data gathered from Larga Vista community required further verification for the variables' trends because of the integration of samples from the Colonia itself as well as the adjacent new development, named "Armadello". Therefore, the following stages of analysis were conducted:

    First: data from each Colonia was compared using bar graphs. The data for the variables compared were gathered from the primary data source (house fronts pictures) and analyzed as explained in the sample coded data in figure 4 and table 3. This stage aimed at identifying data from Colonias supporting

the hypotheses (**H1** and **H2**), and determining whether to include or exclude the date gathered from the new development in the assorted data used in the next stage of analysis.

Second: a z-test for two population comparisons was conducted for comparing equality of proportions for the same variables (porch existence, entrance location, fence existence, and gate existence). This test aimed at identifying the similarities and differences among the features supporting or rejecting the hypotheses (**H1** and **H2**) in the sample gathered from each Colonia, which required the data gathered from the pictures (primary data).

Third: triangulation of data was conducted through crosstabulation and chi-square tests for independence and homogeneity for the two types of data (primary or secondary) based on measuring the "vernacular form" through the roof form.

Stage II: Variables Testing

To test for the variables identified through the two sets of data, data from all Colonias was assorted and the following tests were conducted:

- **H1**: Tests for relationships between porch existence and roof form were conducted through cross tabulation and chi square test for independence and homogeneity (Ott and Longnecker 2001, and SPSS Inc. 2003).

- **H2**: Estimates of mean, standard deviation, and standard error were calculated through SPSS (2003). Then, paired sample t-test for comparing the means of security element (fence and gate) was conducted. Also, the same test was carried out to test the differences of sample means for the security element (fence) and the semiprivate space (porch).

- **H3**: Percentages of the social features (e.g. knowing about the Colonia, having kin/friends in the same Colonia, and builder's identity) were calculated first. Then, crosstabulation and chi-square test for independence and homogeneity were performed for the relationship between builder's identity and moving decision.

- **H4**: Percentages of (duration of stay in the Colonia) were calculated, and crosstabulation and chi-square test for independence and homogeneity were performed for the relationship between duration of stay and visits frequency to home town.

Research Limitations

The study focuses on variables with social and cultural connotations of house fronts. Other important variables, listed as confounding variables in the research design, were not considered. Additionally, the high numbers of no-response gained from the survey questionnaires may have reduced the accuracy of the survey data, thus increasing the bias of the non-probability sampling technique used to select the investigated survey samples.

CHAPTER VI

RESEARCH FINDINGS

The research findings included in this chapter resulted from the two consecutive stages of analysis as explained in the preceding chapter: data comparisons, and variables testing. Through the first stage, variables measuring the morphological aspects (porch, entrance, fence, and gate) were compared in the three Colonias; z-test provided evidence of unity of some aspects in the three communities and personality of each community through the difference among the compared variables; and triangulated data from both methods with regard to the "roof form" stressed the common traditional forms in Los Altos and Rio Bravo. Also, through the variables testing stage, different tests were conducted to test the research hypotheses.

Stage I: Data Comparisons

This stage comprises a comparison of the trends of the variables measuring housing morphology in the three investigated Colonias. As explained earlier, the purpose of this comparison was to decide whether to include "Armadello development", the new single family detached units adjacent to Larga Vista in the Colonias assorted data or not. The variables comparisons were conducted through bar graphs, the results of their relevance to the research hypotheses are discussed below:

Data Concerning First Hypothesis (H1)

The comparison of "roof form" among the three samples of Clonias house fronts, shown in figure 5, confirmed that there is a trend among the data for the utilization of roof forms, most of which was the traditional "gable" roof. The trend of roof form utilization was distorted when the sample of Larga Vista incorporated "Armadello development" in it. On the other hand, the trends in Larga Vista were in the normal range for both Los Altos and Rio Brave if "Armadello development" was excluded from the sample taken from Larga Vista (indicated as LV-ex).

Additionally, because of house fronts in the traditional communities used to entail buffers, represented by porch utilization (Lawrence 1989), figures 6 and 7 show the tendency of porch existence and location in the sample of Colonias' house fronts. Again, there is a distortion in the percentage of houses with porches -indicated as Y for "Yes"- in the Larga Vista (LV) comprehensive sample that includes "Armadello development". The reason for such a shift is the utilization of porches in the entire "Armadello" sample.

Moreover, in figure 7, LV comprehensive sample adopted the traditional roof form and a high percentage of porch utilization, although it was in the front, which reduces the privacy concerns. On the other hand, LA, RB, and LV-ex samples showed a lower percentage of the roof form "gable roof" and the existence of "porch", although the porch location varied between front, front/side, and two-sides (s/s).
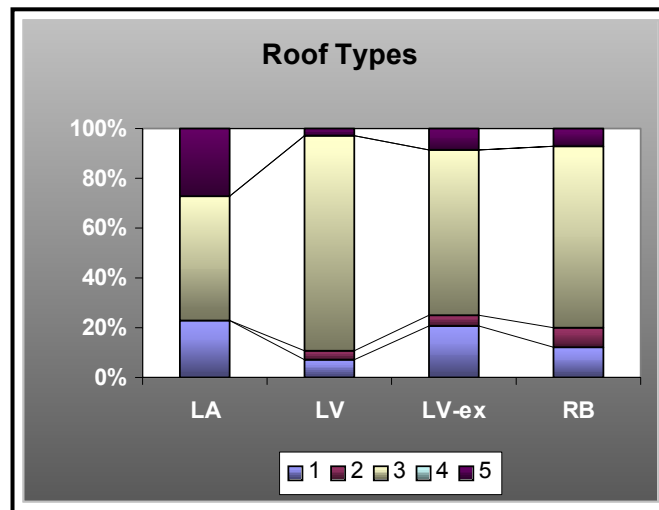

Fig. 5. Differentiation in the trend of roof form types in the three Colonias
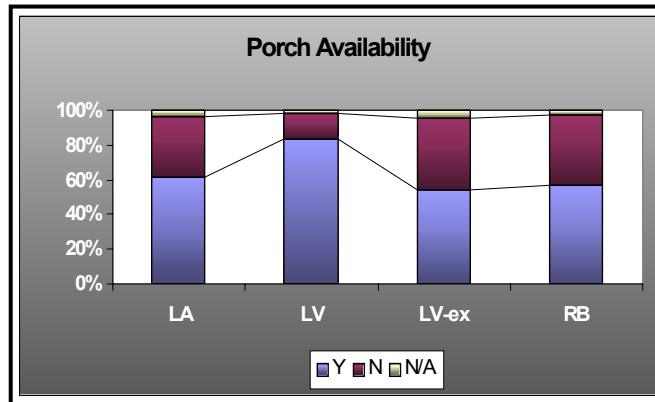1= flat, 3= gable, 5= hip roof

Fig. 6. Differentiation in the trend of porch availability in the three Colonias
Y: yes, there is a porch
N: no, there is no porch
N/A: not available (could not be determined because of invisibility)
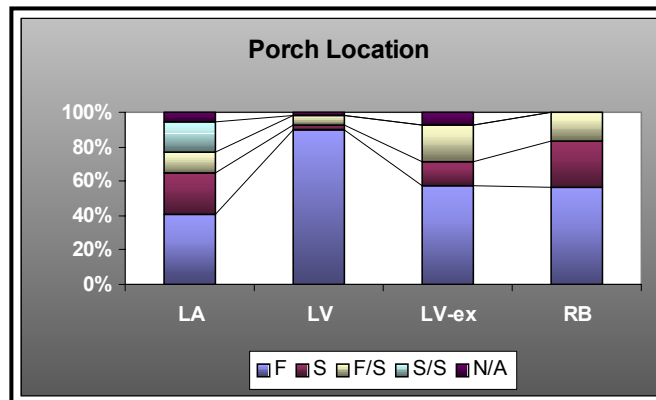

Fig. 7. Differentiation in the trend of porch locations in the three Colonias
F: front
S: side
F/S: front and side
S/S: in two sides
N/A: not available (could not be determined because of invisibility)

Data Concerning Second Hypothesis (H2)

The significance of "security" elements as the factors shaping the residents' identity (Turner 1972,

and McBride and Clancy 1976) was explored in this stage. The utilization of such elements- represented

here by fences and gates- showed a significant decrease in "Armadello" new housing units. While figure 8

shows that the existence of a fence was not significant in the comprehensive sample of Larga Vista, figure 9, provided evidence that the utilization of gates –indicated by Y for "Yes"- in both Los Altos and Larga Vista comprehensive sample was uniform. A fact signifies the importance of securing the borders of lots both in Larga Vista-ex and Rio Bravo.
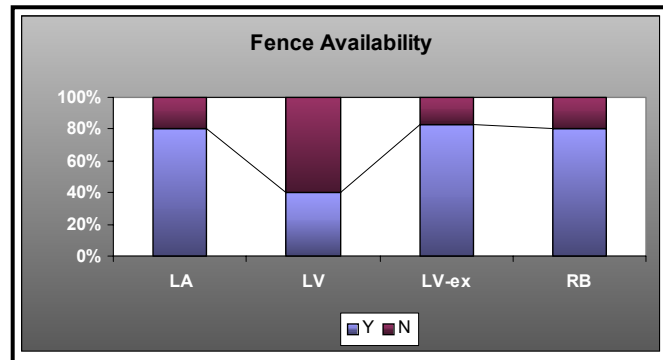

Fig. 8. Differentiation in the trend of fence availability in the three Colonias
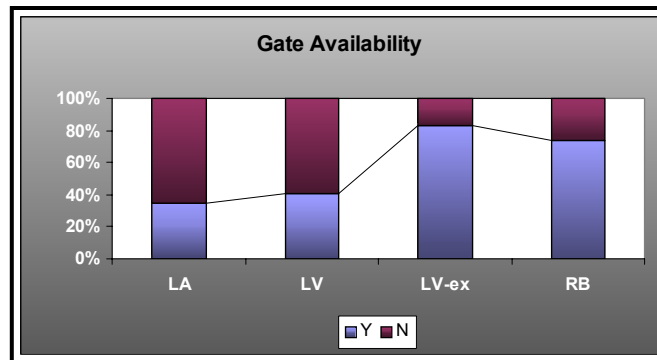Y: yes, there is a fence
N: no, there is no fence

Fig. 9. Differentiation in the trend of gate availability in the three Colonias
Y: yes, there is a gate
N: no, there is no gate

Supporting/Rejecting Hypotheses (H1 and H2) through z-test

The data from Colonias' pictures sample was used separately to verify the samples adherence with the hypotheses (H1 and H2) that test the vernacular form (roof and entrance), privacy and security elements

(fence and gate), and social features (porch). To compare the availability of semi-private spaces (porch),

front and side entrance, and existence of fence and gate, z-test for the two populations' comparisons, as

shown in table 5, was conducted by using the formula –shown in equation 1.

Formula used for z-test:

$$\text{Equation 1 } z = \pi_1 - \pi_2 / \sqrt{\pi_1(1-\pi_1)/n_1 + \pi_2(1-\pi_2)/n_2}$$
$$\alpha = 0.05$$

Table 5
Statistics and z-test results for the porch, entrance, fence, and gate in the three selected Colonias

	N	π	σ	Comparisons	z-test	Results
Porch (existence)						
LA	26	0.62	0.095	LA&LV	-2.1	Reject H0 of equality of means
LV	67	0.84	0.045	LA&RB	1.43	Can not reject H0 of equality of means
LV-ex	24	0.54	0.10	LA& LV-ex	2.96	Reject H0 of equality of means
RB	126	0.57	0.044	LV&RB	4.28	Reject H0 of equality of means
Entrance (front)						
LA	26	0.73	0.087	LA&LV	-0.91	Can not reject H0 of equality of means
LV	67	0.82	0.047	LA&RB	1.23	Can not reject H0 of equality of means
LV-ex	24	0.58	0.1	LA& LV-ex	2.16	Reject H0 of equality of means
RB	126	0.61	0.043	LV&RB	3.28	Reject H0 of equality of means
Entrance (side)						
LA	26	0.23	0.083	LA&LV	1.08	Can not reject H0 of equality of means
LV	67	0.13	0.041	LA&RB	-1.29	Can not reject H0 of equality of means
LV-ex	24	0.29	0.093	LA& LV-ex	-1.58	Can not reject H0 of equality of means
RB	126	0.35	0.042	LV&RB	-3.72	Reject H0 of equality of means
Fence (existence)						
LA	26	0.81	0.077	LA&LV	4.2	Reject H0 of equality of means
LV	67	0.40	0.059	LA&RB	0.12	Can not reject H0 of equality of means
LV-ex	24	0.83	0.076	LA& LV-ex	-4.42	Reject H0 of equality of means
RB	126	0.80	0.036	LV&RB	-5.7	Reject H0 of equality of means
Gate (existence)						
LA	26	0.35	0.094	LA&LV	-0.45	Can not reject H0 of equality of means
LV	67	0.40	0.059	LA&RB	-3.8	Reject H0 of equality of means
LV-ex	24	0.83	0.076	LA& LV-ex	-4.42	Reject H0 of equality of means
RB	126	0.74	0.039	LV&RB	-4.7	Reject H0 of equality of means

Although, categorizing morphological themes and relating them to each specific Colonia showed evidence of uniformity as shown in the preceding sections, z-test output, as shown in table 5, confirmed inconsistency of some elements as shown below:

- "Porch": The incorporation of semi-private space (porch) deferred in the tests of equality of proportions, although for LA and RB the proportions could be equal, so the hypothesis could not be rejected. This explains the difference in utilizing the porch and the process of change in the communities which was implied in reducing the needs for the buffer -"transitional" space- that prevent a direct contact between the inner –private- space and the outer –public- space. This change was witnessed in LV and LV-ex data when compared to other Colonias. One of the impacts of this could be the influence of adjacency to Laredo city periphery, and the interaction with the nearby new development "Armadello". With regard to the porch, the test showed that the hypothesis of equality of proportions in LA and LV (with and without considering "Armadello development") is rejected.

- "Entrance location", the data shown in table 5 indicates high proportions of front entrance compared to the side entrance. LV and RB deferred in proportions of both front and side entrance. However, the equality of proportions of LA and RB could not be rejected, which implies the possibility of having common feature of residents' preference in entrance location.

- "Security" elements (fences and gates), LA and LV (with or without Armadello sample) had different proportions, which showed differences in the sense of security in both Colonias. With an exception of gate existence, the two Colonias proportions are extremely different.

- The outcome of the test comparing LA and LV-ex showed a great distinction between both Colonias. All aspects of analysis were different in their proportions with the exception of the side entrance. Therefore the hypotheses of equality of proportions were rejected.

Supporting/Rejecting Hypotheses through Triangulation

Besides the sociocultural characteristics, survey data were used to investigate the traditionality vs. modifications of themes, which was measured through the roof form. In table 6, the majority of LA and

RB investigated samples (46% in LA & 24% in RB) confirmed that they used to live in a house with a roof similar to form "3", a gable roof identified by Shipway and Shipway (1960) as the traditional form that was utilized in Mexico to protect the adobe walls from the rain. Also, the flat roof "1", a common roof form in rural areas in Mexico (West 1974) was marked as a second common roof (14% in LA & 9% in RB), followed by the hip roof "5" (10% LA & 10% RB), which is also a form denoted to the protection from rain.

In addition to the statistics provided for the utilization of roof form in the investigated Colonias, the following cross tabulation and chi-square test were conducted. The cross tabulation measured the change of expected counts vs. the actual count of each roof form in both the primary data (indicated as RB-picture, and LA-picture), and secondary data (indicated as RB-survey, and LA-survey). By comparing survey data which represents the home town roof form with the images data that reflects the current residence roof form, this test provides significant information about two different eras of subjects' life. The comparison aimed at providing information regarding the vernacular form they used in their home town and whether the residents still have the same preference in house form after moving to a settlement closer to the Anglo society. Table 7 showed that form "3" has the highest expected value in both pictures and survey data of RB and LA. The second highest estimates for expected counts in both types of data were for the form "1", and then form "5".

To provide additional information about the accuracy of data sources, chi-square test for independency and homogeneity of variable, shown in table 8, proved that at 9 degrees of freedom, and with a 95% confidence, the proportion of roof forms in each set of data is dependent on the data source as shown in Pearson chi-square and Likelihood ratio tests.

Table 6
Responses of "roof form" question in home town houses in Los Altos and Rio Bravo surveys

Variable (roof form)	Los Altos		Rio Bravo	
	N*	%	N*	%
Form "1"	9	18.0	14	18.2
Form "2"	4	8.0	4	5.2
Form "3"	24	48.0	46	59.7
Form "4"	1	2.0	1	1.3
Form "5"	10	20.0	10	13.0
Form "6"	0	0.0	0	0.0
Form "7"	1	2.0	0	0.0
Form "8"	0	0.0	1	1.3
Form "9"	1	2.0	1	1.3
Total	50	100	77	100

Table 7
Crosstabulation of "type of data" and "roof forms" (1,2,3,and 5)

			Colonias data type				
			RB-survey	RB-picture	LA-survey	LA-picture	Total
Roof form*	form "1"	Count	14	15	9	6	44
		Expected Count	11.9	20.3	7.6	4.2	44.0
		Std. Residual	.6	-1.2	.5	.9	
	form "2"	Count	4	10	4	0	18
		Expected Count	4.9	8.3	3.1	1.7	18.0
		Std. Residual	-.4	.6	.5	-1.3	
	form "3"	Count	46	92	24	13	175
		Expected Count	47.4	80.8	30.1	16.7	175.0
		Std. Residual	-.2	1.2	-1.1	-.9	
	form "5"	Count	10	9	10	7	36
		Expected Count	9.8	16.6	6.2	3.4	36.0
		Std. Residual	.1	-1.9	1.5	1.9	
Total		Count	74	126	47	26	273
		Expected Count	74.0	126.0	47.0	26.0	273.0

* Forms 1,2,3, and 5 are shown in the survey in appendix B and C. Forms (4, 7,8, and 9) were excluded because they showed expected values less than 3.

Table 8
Test of independence and homogeneity for the relationship between "type of data" and
"roof form"

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.484(a)	9	.030
Likelihood Ratio	19.736	9	.020
Linear-by-Linear Association	1.072	1	.301
N of Valid Cases	273		

a 5 cells (31.3%) have expected count less than 5. The minimum expected count is 1.71.

Stage II: Variables Testing

As a final stage of analysis, data was assorted to test the variables investigated through both the primary and secondary methods, which is discussed below as they provided evidence regarding the support or rejection of the four hypotheses:

First Hypothesis (H1)

To test the relationship between semi-private space (porch) and roof forms, the crosstabulation in table 9 confirmed that residents who used the traditional form "3" –a gable roof- in their roof used to incorporate a porch in their house front. Also, a high proportion of those who constructed the flat roof "1", a traditional form used in rural Mexico, used to have porches in their homes. Confirming that, the chi-square output in table 10, showed that in both Pearson chi-square and Likelihood ration tests, there is significant evidence that roof form and porch existence are dependent on each other. Therefore, the first hypothesis was rejected because of the significant relationship between the utilization of semi-private space (porch) and the construction of traditional roofs. On the other hand, there was no significant evidence that the hypothesis of independence could be rejected in linear by linear association test.

Table 9
Cross tabulation of "porch availability" and "roof form"

| | | | Porch existence | | | |
			Yes	No	N/A*	Total
Roof form**	form "1"	Count	12	13	1	26
		Expected Count	14.9	10.3	.7	26.0
		Std. Residual	-.8	.8	.3	
	form "2"	Count	5	6	0	11
		Expected Count	6.3	4.4	.3	11.0
		Std. Residual	-.5	.8	-.6	
	form "3"	Count	69	50	2	121
		Expected Count	69.4	48.1	3.4	121.0
		Std. Residual	-.1	.3	-.8	
	form "5"	Count	15	1	2	18
		Expected Count	10.3	7.2	.5	18.0
		Std. Residual	1.5	-2.3	2.1	
Total		Count	101	70	5	176
		Expected Count	101.0	70.0	5.0	176.0

* Not Available
** Forms 1,2,3, and 5 are shown in the survey in appendix D, and (4, 7,8, and 9) were excluded because they showed expected values less than 3.

Table 10
Test of independence and homogeneity for the relationship between "porch existence" and "roof form"

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.958(a)	6	.021
Likelihood Ratio	16.281	6	.012
Linear-by-Linear Association	3.362	1	.067
No. of Valid Cases	176		

a 5 cells (41.7%) have expected count less than 5. The minimum expected count is .31.

Second Hypothesis (H2)

The statistical analysis of the assorted data, as shown in table 11, provided evidence for preserving some of the inherited security elements, particularly the fence (60.82% of residents installed fences). However, gates were rarely used (only an average of 8.77% of the lots has gates). Also functioning as a

privacy element, the utilization of porches was relatively low (only 49.12% had porch either in the front or in the sides or in both).

Confirming the implications of the above statistics, the paired sample t-test –shown in table 12- confirmed that the utilization of fence was more than the use of gates because the hypothesis of equality of means was rejected at 95% confidence. In addition, test of the equality of means between "fence" and "porch", as shown in table 13, confirmed that there is no significant difference between the two means. Therefore, constructing a "porch" could be relevant to the installation of a "fence". Thus the second hypothesis was rejected for the porch-fence relationship.

Table 11
Statistics of security elements ("fence" and "gate") and "porch" existence

Variable	N	Mean (of existence)	Std. Deviation	Std. Error Mean
Fence	171	0.6082	0.48959	.02987
Gate	171	0.0877	0.28372	.03985
Porch	171	0.4912	0.50139	.06017

* A: across the street, B: 5-10 minutes walking distance, C: 10-20 minutes walking distance, E: less than 15 minutes by car. Other distance options (D, F, G, and H) were excluded because their expected counts were less than 3.

Table 12
Paired sample t-test output for "gate" and "fence" existence

		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean					
					Lower	Upper			
Pair 1	Fence - Gate	.52047	.50105	.03832	.44483	.59610	13.584	170	.000

Table 13

Paired sample t-test output for "fence" and "porch" existence

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Fence - Porch	.11696	.83194	.06362	-.00863	.24255	1.838	170	.068

Third Hypothesis (H3)

Having acquaintances –kin or friends- in the Colonia was considerably an important factor affecting the decision of the new settlers when they thought about moving to Colonia. A fact has been identified and confirmed through the migration theory, particularly in informal and squatter settlements, by different scholar (Stalker 2004). The Colonia was a typical example for this theory as table 14 proved that 85.9% of the total surveys sample knew about Colonia from acquaintances (43.6% from friends and 42.3% kin). Also, 77.5% of this total ratio descended to the Colonia where their acquaintances live.

Also, in Colonia- as an informal settlement- the support offered by families and friends to the new settlers was essential. This support does not only provide information about the new opportunity this land promises (Stalker 2004), but continues in other ways of help such as providing free labor to help in constructing the new house for the new comers. Also, as confirmed in table 15, builder's identity appeared as a major factor influencing housing production in the Colonias. The table shows that 48.3 % of the investigated samples have built their houses by themselves and their spouses, or by seeking support from their acquaintances (30.2% were self/or spouse, and 18.1% were kin assistance). Therefore, the first part of the hypothesis that production of housing in Colonias does not rely on the builders' identity was rejected. However, the high percentage of the "no response" and "other" (45.6%) is critical and may affect the results deduced from this analysis and the results from chi-square test as well.

In addition, the cross tabulation –shown in table 16- stressed the fact identified in table 15. As shown in table 16, regardless of the decision to move to the Colonias, most of residents used self-help approach to construct their houses. The table shows that although the highest expected count was for those who did not

respond to the builders' identity question, the majority of expected counts for other respondents used kin then self/spouse options in answering the question.

Also, chi-square tests for independence and homogeneity -shown in table 17- provided evidence that motives of moving to Colonia and builder's identity are dependents on each other because the hypothesis of independence was rejected. The implication of such a result is that the decision to move to the Colonia and builders' identity are relevant. Therefore, the second part of the third hypothesis was rejected.

Table 14
Analysis of total responses for ways of "knowing about Colonia" and "having kin/friends" in the same Colonia

Variable	N	%
Knowing about Colonia		
From friends	68	43.6
From kin	66	42.3
Other	22	14.1
Total		100
Having kin/friends in the same Colonia		
Yes	86	77.5
No	25	22.5
Total	79	100

Table 15
Analysis of total responses for "builder's identity" question

Variable (builder's identity)	N	%
self and/or spouse	55	30.2
kin assistance	33	18.1
local contractor	11	6.0
Other	14	7.7
No response	69	37.9
Total	182*	100

* Total responses of builder's identity question not the total responses of the survey forms.

Table 16
Crosstabulation for the relationship between "motives of moving" to each particular Colonia, and "builder's identity"

			builder identity					
			self/spouse	kin	contractor	other	no response	Total
motives	kin	Count	7	8	3	0	21	39
		Expected Count	4.9	8.4	2.9	3.5	19.4	39.0
		Std. Residual	.9	-.1	.1	-1.9	.4	
	friends	Count	3	2	0	1	4	10
		Expected Count	1.3	2.1	.7	.9	5.0	10.0
		Std. Residual	1.6	-.1	-.9	.1	-.4	
	home	Count	3	16	7	4	24	54
		Expected Count	6.8	11.6	4.0	4.8	26.8	54.0
		Std. Residual	-1.5	1.3	1.5	-.4	-.5	
	other	Count	1	2	0	7	8	18
		Expected Count	2.3	3.9	1.3	1.6	8.9	18.0
		Std. Residual	-.8	-.9	-1.2	4.3	-.3	
	no response	Count	3	1	0	0	10	14
		Expected Count	1.8	3.0	1.0	1.2	6.9	14.0
		Std. Residual	.9	-1.2	-1.0	-1.1	1.2	
Total		Count	17	29	10	12	67	135
		Expected Count	17.0	29.0	10.0	12.0	67.0	135.0

Table 17
Test of independence and homogeneity for the relationship between "motives of moving" to a Colonia and "builder's identity"

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.437(a)	16	.000
Likelihood Ratio	40.661	16	.001
Linear-by-Linear Association	1.611	1	.204
No. of Valid Cases	135		

a 18 cells (72.0%) have expected count less than 5. The minimum expected count is .74.

Fourth Hypothesis (H4)

The majority of residents -as table 18 showed- have been living in the Colonias for over five years. As table 18 also showed, 46% of the residents are in the Colonias for "other" years, which has a mean of 14.14 years, and 16% have been living there for over five years. To investigate the relationship between the differences in durations of stay and networking with home towns, crosstabulation was conducted –as table 19 showed- a for the relationship between the two variables: duration of stay was indicated by rows (1-5 years; more than 5 years; other, which has a mean of 14.14 years), and the frequency of visits to home

town indicated by columns (once-twice/year; 5-10 times/year; several times/month; other). Table 19

provided evidence that that those who stayed for "other" periods have the highest expected count. Also,

the three results of chi-square tests for independence and homogeneity shown in table 20, confirmed that

we can not reject the hypothesis of independence of the two variables. Therefore, the frequency of visits to

home town and the duration of stay in Colonia could be independent on each other, which means that

residents may have had the same frequency of visits to their home towns regardless the time they have

been in the Colonias. From this analysis, the fourth hypothesis was rejected.

Table 18
Analysis of the "duration of stay" in Colonias

Duration of stay	N	%
Less than one year	25	14
One-Five years	43	24
More than Five years	29	16
Other*	79	46
No response	0	0
Total	176	100

* Mean of "other" duration of stay was estimated as 14.14 years.

Table 19
Crosstabulation for the relationship between "duration of stay" in the Colonia, and "frequency of visits" to home
town

			frequency of visits				
			1-2/y	5-10/y	several/m	other	Total
duration of stay	1-5y	Count	12	7	9	4	32
		Expected Count	9.8	6.0	9.6	6.6	32.0
		Std. Residual	.7	.4	-.2	-1.0	
	>5y	Count	4	3	11	6	24
		Expected Count	7.4	4.5	7.2	4.9	24.0
		Std. Residual	-1.2	-.7	1.4	.5	
	other*	Count	20	12	15	14	61
		Expected Count	18.8	11.5	18.2	12.5	61.0
		Std. Residual	.3	.2	-.8	.4	
Total		Count	36	22	35	24	117
		Expected Count	36.0	22.0	35.0	24.0	117.0

* The mean estimate of "other" duration of stay= 14.14 years.

Table 20
Test of independence and homogeneity for the relationship between "duration of stay" in the Colonia and "frequency of visits" to home

	Value	df	Asymp. Sig*. (2-sided)
Pearson Chi-Square	6.855(a)	6	.334
Likelihood Ratio	7.088	6	.313
Linear-by-Linear Association	.368	1	.544
No. of Valid Cases	117		

a 2 cells (16.7%) have expected count less than 5. The minimum expected count is 4.51.
* The thee significant values are more than α (0.05).

Implications: Vernacular vs. Modified Themes

Cooper (1974) and others emphasized the psychological relationship between the physical form of the home and self-identity. In their study, there was an assumption that there is a dynamic relationship between a person and the physical environment which means that the person creates an environment that reveals his/her nature. This nature is the experience he/she had from the past, present, and anticipated environment. Rapoport has also emphasized that in his notion: "the built environment is the result of vernacular (folk or popular) architecture, and it has been largely ignored in architectural history and theory" (Rapoport, 1969, p. 1), emphasized people's input n their built environment. This input –as confirmed in this research- varied in spite of the homogeneity of ethnicity among Colonias residents as explained below.

House Front Themes and Social Connotation

Along with Rapoport' previous notion, the concluded themes of house fronts in Colonias varied in terms of their social connotation, and their existence in each Colonia. The impact of Colonias' residents on semi-private space "porch", security elements "fence and gate", and Accessibility element "entrance location" varied from Colonia to another. The two Colonias LA and RB were not significantly different with regard to the existence of porch, front and side entrances, and utilization of fence to secure property borders. However, they varied in their utilization of gates. On the other hand, LV had some common

themes with LA represented by front and side entrance, and another security element represented by

"gate". However, when "Armadello development" sample was excluded, LV characteristics had a

significant difference with LA regarding privacy and security indicated by "porch" existence, "front

entrance", "fence" and "gate". This concludes that, although LV is closer to LA than RB, the fact that LV

is adjacent to the new development and to Laredo city skirt may have had the impact which caused this

differentiation.

With regard to the vernacularism, Rapoport (1969) stated that house is the most typically vernacular

type of buildings. One of the main aspects of which is preserving the concept of territoriality, which was

proved in the overall data testing. The provided tests explained that there is a significant difference

between the uses of fence and gates. The mean of "fence" availability was higher than that of "gate"

availability, a fact stresses that residents are more concerned of securing their borders than preventing the

interaction with others (neighbors or those who pass by).

In addition, Colonias' residents have also been trying to preserve their popular culture and social

customs. This was achieved through: 1) improving the networking with their kin and friends in their home

town, a fact was confirmed through survey data analysis which showed that there is no relationship

between the duration of stay in Colonia and the frequency of home town visits which implies that Colonias

residents did not have a consistent pattern of visits to kin at home town; 2) preserving their social

networking with each other in the same Colonia. As measured through visits frequency, there was a

significant difference between frequencies of visits according to the distance to kin who live in the same

Colonia. However as closer their houses are to their kin, as higher the expected counts for the visits they

do, and 3) using the same traditional roof forms that are commonly used in Mexico. The data analysis

proved that, there is a high tendency of using the gable roofs, flat roofs, and hip roofs.

Residents and Acquaintances Impacts

Thee results of the analysis of motives of moving to each particular settlement confirmed that,

although moving to own a home was the highest proportion among the different suggested motives,

residents used to move to Colonias where they had some one they knew –kin or friends- who told them

about this new place as a new opportunity, and assisted them in their early settling process. The role of acquaintances was to offer the support during building their houses, and as confirmed by different studied of the migration theory (e.g Stalker 2004), people migrate from stressed areas –usually rural land- to an urban or peri-urban land where there is a hope for better opportunities.

Stalker (2004) has also emphasized the role of migrant's networks. In his online guide, he stated that migrant's networks often begin with an individual choice: one adventurous person migrates from a village and discovers the opportunity. When he/she talks to kin and friends about the rewards of such a moving, this encourages them to migrate, and hence creates a new migration structure (Stalker, 2004). Following the same strategy, Colonias' residents represent a prototype migration structure, in which those who move to the new land were in light of their acquaintances experience of accomplishing the same opportunities the new land provides.

Vernacular and/or Modified House

Vernacular is defined as indigenous, used by the people; anonymous as of unknown authorship. The vernacular design process is one of the models and adjustments or variations, and there is more individual variability and differentiation than in primitive buildings (Rapoport 1969). In addition, the characteristics of vernacular building were explained as lack of theoretical or aesthetic pretensions; working with the site and micro-climate; respect for other people and their houses and hence, for the total environment; man-made as well as nature; and working within an idiom with variations within a given order (Rapoport 1969).

From these definitions, Colonias house fronts are considered one of the examples of redefining vernacular values of its residents who descended to the present environment of the border region. A process of modification of their inherent values occurred, while the networking with origin as well as socialization process among Colonias' residents –representing past- assisted in preserving the vernacular values. This process stresses that the ongoing change of social and cultural values are implications of the change from "past" to "present" and the backwardness from "present" to "past". Such a process could be defined as a two-pole continuum that on one of its poles we can place the vernacular values, while on the

opposite pole, we can place the new land of the new environment. Thus, themes compiling migrants'

housing fronts in Colonias could be described in terms of their vrnacularity/modernity by relating them to

both poles. Hence, house fronts characteristics could be somewhere on the continuum of past and present

experience; however, this location is not static. Its dynamic status is a result of the fore and backward

change of migrants' environment (as shown in Geddes and Bertalanffy's model in Chapter II).

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This chapter summarizes the results of the study and provides a brief analytical view of the tests conducted and the interpretations deduced from the findings. Although the provided interpretations conclude that Colonias have a variety of themes that adhere to the common informal settlements features, some differences among those themes were marked and will be discussed in the following sections.

The empirical research incorporated in this study, as well as the literature supporting it, investigates the social dilemma of house fronts in the Colonias. Also, the explained methodology of investigating and testing the four research hypotheses offered some insight of the unity of the social pattern in the Colonias. The demarcation of features identified in this study was sometimes relevant to physical elements, yet it also had significant social connotations. This demarcation, as explained in prior chapters, represents the dynamism of status that most of immigrants communities are facing, particularly as the migrants leave their traditional environment towards the new settlements that offered them a better opportunity (Stalker 2004). Although, this status is not static, and hence it can hardly be verified, this research provided the enabling tools that can be employed to measure the occurring changes/modifications.

Conclusions

The interpretations of research findings, when compared to the relevant literature reviewed in this study, proved the preservation of a few traditional features which contribute to the morphology of house fronts and the absence/modification of some other features. The impact of this on house fronts form was symbolized in two major influences: namely *Core* and *modified* elements. Thus, the hypnotized model of Geddes and Bertalanffy, which was explained in detail by Turner (1968), could be applied to the form and production of Colonias' housing. Accordingly, the two main concepts composing this model –when

applied to Colonias housing- are shown in the following two sections, which explain the utilization of both primary *core* elements, and the secondary *modified* elements in Colonias' house fronts:

Utilization of Primary Core Elements

Privacy elements and traditional form: the utilization of a semi-private space "porch" acting as a buffer to prevent the direct contact between the "private" and "anonymous" space was a major element in Colonias housing. Although proportions of porch existence varied from one Colonia to another, it was integrated as part of house fronts in the three investigated Clonias. In spite of the significance of such a transitional zone, it is not recommended to incorporate porch –front, side, or both- in all housing units in models suggested by developers or housing organizations. With regard to vernacular roof forms, the strong relationship between "porch" utilization and traditionality of "roof form" revealed that a high percentage of residents constructed gable roofs, flat roofs, and hip roofs. Therefore, rejecting the first hypothesis emphasized the preservation of traditional *core* elements by constructing both traditional roofs and porches.

Based on this, development companies, and policy makers may stress the utilization of both traditional roof forms (gable and flat) along with porch for some units they are selling. Accordingly, design regulations in the area may stress the implementation of these three roof types. Also, housing development organizations as well as non-profit organizations may provide these three forms in their designs as well.

Security elements: these elements, represented by fences and gates, are involved in creating identity (Lawrence 1989). Partly rejecting the second hypothesis confirmed that, although fences were widely utilized, gates, as an indication of property closure, were rarely installed. From the preceding chapter of research findings, it can be seen that only 60.82% of the sample built a fence to secure and protect their lots borders. Also, the utilization of fences did not always include closing the borders by installing a gate. Based on this result, having a fences may be better explained as an interpretation of place-identity (Proshansky et al. 1983) and is therefore a theme that could be encouraged among residents building their

own houses. However, development companies may also consider it as a tool for securing borders through lot demarcation.

Social endorsing elements: classified as "primary" factors in house form, Rapoport (1969) stressed the significance of social factors on house form. In Colonias, the relationship with kin plays a major role in house production. Based on the rejection of the third hypothesis, it can be concluded that the employed self-help approach relied in most cases on self, family members such as spouses, and kin or friends who helped in the moving arrangements. Additionally, in Colonias, each nuclear family is typically associated with an extended family or a group of friends/acquaintances. To provide solutions for sheltering part of this entity, developers may deal with/consider the remaining part of it. For instance, platting a new Colonia may be based on a "plaza" planning model, a classical model in Southwest villages as explained earlier by Conway (1952), through which each group of houses (cluster) entail a homogeneous group (e.g. acquaintances or an extended family).

Building Rituals: the suggested type of "Plaza" layout for Colonias will provide the opportunity for new comers to benefit from the adjacency of their kin/friends in building their own house through the self-help model. A pattern has been supported by the rejection of the fourth hypothesis, which emphasized the preservation of the residents' cultural features. Through adopting one or more phases of construction, this pattern could make it more likely that residents will increase their mutual support for each other, which in turn would enhance the ties of social structure.

Utilization of Secondary Modified Elements

Security elements: Although the fences were widely used to protect lots borders and to enhance the privacy of residents (Pereau 1993), rejecting the first hypothesis proved that in the investigated Clonias, "gate", which implies the property closure, was rarely installed (Only 8.77% of residents used such an element). Therefore, development companies, housing organizations, and policy makers may not provide a fenced lot with a gate, because providing a gate may weaken the social customs the community is attempting to preserve by allowing the interaction between "public" –anonymous- and semi-private spaces in spite of the demarcation of borders by building a fence.

Finally, although the research provides a tool for measuring sociocultural factors incorporated in physical themes of house fronts, it does not indicate where the process of change in this social connotation stands with regard to other Hispanic communities. However some comparisons were provided for the three investigated Colonias in Webb County.

Recommendations for Further Studies

This study, while being mainly exploratory in nature, still contributes to the sociocultural studies of the U.S.-Mexico borderlands. Its significance includes establishing a basis for analyzing the social connotations of elements of housing fronts and verifying the relationship between the different themes comprising them. Although, the research provided an investigation of morphological themes through some selected variables as an exploration for the Colonias housing form, it could be supported by further investigations of housing provision and the requirements for building a vernacular house in Colonias. The following are a few suggested topics for further studies:

- An investigation in other variables integrated in house fronts. For instance, the income, household size, and family type.

- Additional information about building rituals could be investigated through identifying the "current" utilized materials and the residents; "preference" in the construction as well as finishing materials. Such a study can provide information about the change/maintenance of traditionality of use of materials, and the factors affecting the shift (if any) occurred.

- Color theory can be a potential for another study in house fronts themes because of its comprehensiveness and detailed interpretations. This fact limited the possibility of using "color" as a variable in this research, although some date about colors used in walls and roofs was gathered.

- Cost of constructing self-help housing units in Webb county Colonias and policies for providing housing assistance for Colonias residents may be a significant elaboration for this research.

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APPENDIX A

SURVEY BASIC LITERATURE MAP

Richard Flores 1992; Antonio Uglade 1974;	Moving decision	
Richard Flores 1992; Jana Pereau 1993; Elizabeth Briody 1989; Antonio Uglade 1974;	Kinship availability	
Richard Flores 1992; Jana Pereau 1993; Antonio Uglade 1974;	Relationship with Kin	Current Status
Oscar Lewis 1960; John F. C. Turner1972	Visits frequency & notification	
Jan Bazant Sanchez 1985; Jana Pereau 1993;	Family type and size	
Gillian Stevens 1985; Raul A. Fernandez 1989; Elizabeth Briody 1989; Peter Berger & Thomas Luckmann 1966;	Language	a- Sociocultural Issues
Alex Walker 2001; Oscar Lewis 1960	Visits motives	
Alex Walker 2001; Oscar Lewis 1960	Visits Frequency	Home-town networking
Alex Walker 2001; Connolly 1982; Carlo Aymonino 1985; Jan Bazant Sanchez 1985; Duhau & Schteingart 1997; Jana Pereau 1993; Beverley Spears 1986; Amos Rapoport 1976; ; H.J. Walker & W.G. Haag 1974	Roofs	
Alex Walker 2001; Connolly 1982; Carlo Aymonino 1985; Jan Bazant Sanchez 1985; Duhau & Schteingart 1997; Beverley Spears 1986; Amos Rapoport 1976; ; H.J. Walker & W.G.	Walls	Morphology of home-town's house
Alex Walker 2001; Carlo Aymonino 1985; Jana Pereau 1993; Amos Rapoport 1976	Openings	
Alex Walker 2001; Carlo Aymonino 1985; Jana Pereau 1993; Beverley Spears 1986; Amos Rapoport 1976; H.J. Walker & W.G. Haag 1974	Design elements (Porches, hearth & patio)	B- Housing Issues
James Holston 1991; Connolly 1982; Jan Bazant Sanchez 1985; Jana Pereau 1993; Elizabeth Briody 1989; Beverley Spears 1986; John F. C. Turner1972	Increment Phases	Current house construction
Jan Bazant Sanchez 1985; Jana Pereau 1993	Construction duration	
James Holston 1991; Elizabeth Briody 1989; Beverley Spears 1986; John F. C. Turner1972	House builder	
Richard Flores 1992; Elizabeth Briody 1989; John F. C. Turner	Renting	Current house affordability
Richard Flores 1992; Elizabeth Briody 1989; John F. C. Turner	Ownership	

APPENDIX B

SURVEY QUESTIONNAIRE OF COLONIAS HOUSEHOLDS (ENGLISH)

Part I: Introductory Data

Name of Colonia   : ------------------------------

Number of houses\lot   : ------------------------------

Age of householder   : ------------------------------

Part II: Socio-cultural Issues

II\1 Current Status
II\1\1 Moving-in to Colonia

• When did you **move to** this Colonia?		
A. Less than one year ago	C. More than five years ago	
B. One-five years ago	D. Other, (please specify) -------------------------	

How did you know about this Colonia?		
A. From a friend\ or friends	⇒ Do they live in this Colonia? A. Yes B. No	
B. From our kin		
C. Other (please specify) --		

• What was the basis for your decision to move to this particular property?		
A. To join my kin	C. To own a home that we can afford	
B. To join my friends	D. Other (please specify) -------------------------	

II\1\2 Kinship and Friends

• If your **kin\friends** live in this colonia, how far is their house from yours?		
A. Across the street from our house	E. less than 15 minutes by car	
B. 5-10 minutes walking distance	F. 15-30 minutes by car	
C. 10-20 minutes walking distance	G. More than 30 minutes by car	
D. More than 20 minutes walk		

• How often do you visit them?							
A. Once\week		Twice\week		Three times\week		More than three times\week	
B. Once\month		Twice\month		Three times\month		More than three times\month	

• Do you usually notify them (by phone or any other mean) before your visit?		
A. Yes	B. No	

II\1\3 Neighbors Relationships

• Do you spend time with your next-door **neighbors**?		
A. Yes	B. No	

• How often do you host or visit them?							
A. Once\week		Twice\week		Three times\week		More than three times\week	
B. Once\month		Twice\month		Three times\month		More than three times\month	

II\1\4 Family Characteristics

• How many **families** are living on this lot?					
A. One		B. Two		C. Three	

• Is there is a relationship between them?		
A. Yes	B. No	
(Please specify) _____		

• How many members are in each family of them? And if only one family is living on this lot, how many members are in it?		
A. 2-4	C. 8-10	
B. 5-7	D. More than 10	

• How many members of your family speak English?		
A. None	C. Two	
B. One	D. More than two	
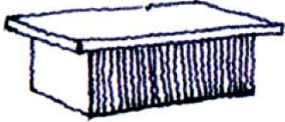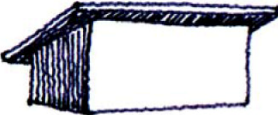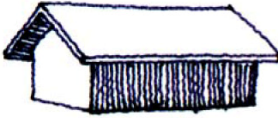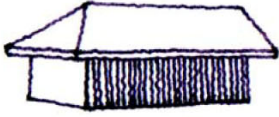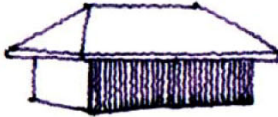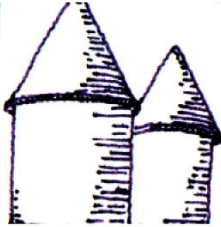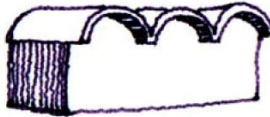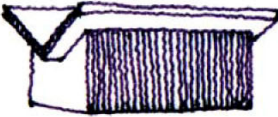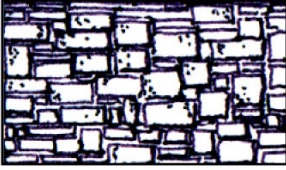
II\2 Networking with Home-Town
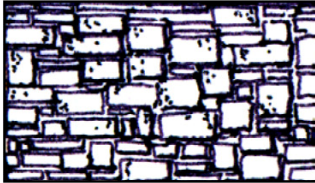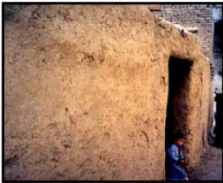
• What is the name of the **town or village** that you came from?   _____

• Can you point it out on the attached **map**?   A. Yes   B. No   If yes, please put a dot on the map where your home town\village was.

• How often do you visit your **original home town\village**?		
A. Once-twice\year	C. Several times\month	
B. Five-10 times\year	D. Other, (please specify) _____	

• Do you still have family or relatives there?   A. Yes   B. No

• What are the motives for your visits to your home town\village?		
A. Spending sometime with the family there	C. Interest in going back to our home	
B. Spending the holidays with the family and\or friends there	D. Other, (please specify) _____·	

• If we provided a disposable camera to you with postage, can your relatives take some pictures of the facades and yards of their house and send the camera back to you?   A. Yes   B. No
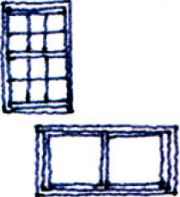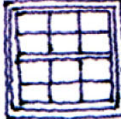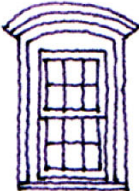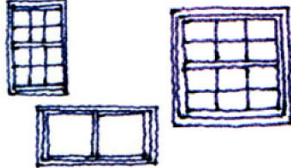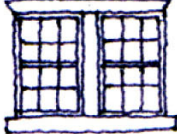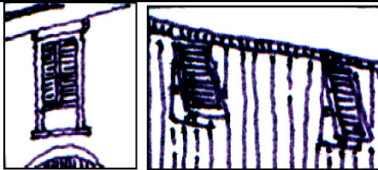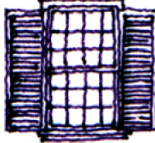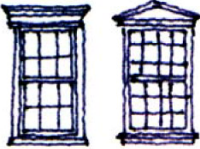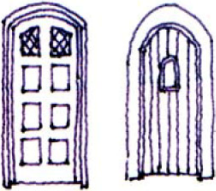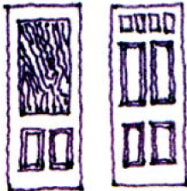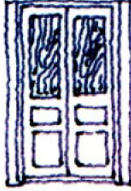
Part III: Housing Issues

III\1 Home-Town's Housing Morphology
Please describe the following elements on your home-town house:

III\1\1 Roofs		
Roof shape: Please check the one you had in your home town house		
1	2	3
4	5	6
7	8	Other,

Roof Color (Colors)

Please identify the color of the house's roof in your home town:

- -

Roof Material (Materials): Please check the one you had in your home town house		
Thatch	Stone	Wood
Modern materials	Tiles	Other

III\1\2 Walls

External-wall Colors

Please identify the wall color (colors)

External-wall Material: Please check the one you had in your home town house

Thatch	Stone	Wood
Stucco	Modern materials	Other,

III\1\3 Openings

Window Shape: Please check the one you had in your home town house

Win-1	Win-2	Win-3	Mix of 1 and 2	Win-4

Window Treatment: Please check the one you had in your home town house

Cross-iron rods	Operable shutters		Non-operable Shutters	Frames

Outside Doors

Door-1	Door-2	Door-3	Door-4

III\1\4 Significant Elements		
Porch (deck\covered entrance)		
Included wide porch	Included small porch	Didn't include porch
Hearth (traditional fireplace)		
Included hearth	Didn't include hearth	
Patio (inner courtyard)		
Included enclosed patio	Didn't include enclosed patio	

III\2 Current Housing Construction Issues

• Was the house that you are currently living in **constructed** in one stage?					
A. Yes					
B. No, in several stages					
• Which of the following spaces was built first?					
Bed room(s)	Water Closet	Living space	Kitchen	Guest area	Other
• How long did it take you to accomplish the current stage of construction?					
Less than a year	One-Five years	Six-10 years	11-20 years	More than 20 years	Other
• Who built this house?					
Self and\or husband\wife		Kin assistance	Hired local contractor		Other

III\3 Current Housing Affordability

• Do you **own** this house?			
Yes		Do you still pay the developer? ⇨ A. Yes How much do you usually pay (each month)? - - - - - - - B. No	
No		Do you pay rent? ⇨ A. Yes How much do you usually pay (each month)? - - - - - - - B. No	
Other, please specify			

APPENDIX C

SURVEY QUESTIONNAIRE OF COLONIAS HOUSEHOLDS (SPANISH)

Parte I: Los datos introductorios

El nombre de colonia	:	------------------------------
El número de la casa / solar	:	------------------------------
La edad del encabezado de la familia	:	------------------------------

Parta II: Los problemas socio-culturales

II\1 El estado actual
II\1\1 Mudanza a la colonia

• ¿Cuándo se mudo usted a esta colonia?			
A. Hace menos de un año		C. Más de hace cinco años	
B. Hace uno - cinco años		D. Otro (por favor especifique) -------------------------	
• ¿Cómo usted supo sobre esta colonia?			
A. Por parte de un amigo \ o amigos		¿Ellos viven en esta colonia? ⟹ A. Sí B. No	
B. Por nuestro pariente			
C. Otro (por favor especifique) --			
• ¿Cuál fue la base de su decisión para mudarse a este propiedad en particular?			
A. Para reunirme con mi pariente		C. Para poseer una casa que nosotros podemos pagar	
B. Para reunirme con mis amigos		D. Otro (por favor especifique) -----------------------------	

II\1\2 Kinship and Friends

• Si sus parientes / amigos viven en esta colonia, ¿qué tan lejos está su casa de la suya?			
A. Enfrente de nuestra casa		E. Menos de 15 minutos en automóvil	
B. 5-10 minutos de distancia, a pie		F. 1de 15-30 minutos en automóvil	
C. 10-20 minutos distancia, a pie		G. Más de 30 minutos en automóvil	
D. Más de 20 minutos, a pie			

• ¿Qué a menudo los visita?							
A. Una vez por semana		Dos veces por semana		Tres veces por semana		Más de tres veces a la semana	
B. Una vez por mes		Dos veces por mes		Tres veces por mes		Más de tres veces al mes	

• ¿Usted normalmente los notifica (por teléfono o cualquier otro medio) antes de su visita?			
A. Sí		B. No	

II\1\3   Las relaciones con los vecinos

• ¿Usted se pasa tiempo con sus vecinos de al lado?			
A. Sí		B. No	

• ¿Qué tan frecuente le visitan o los visita?				
A. una vez por semana	dos veces por semana	tres veces por semana	Más de tres veces a la semana	
B. Una vez por mes	Dos veces por mes	Tres veces por mes	Más de tres veces al mes	

II\1\4 Las características familiares

• ¿Cuántas familias están viviendo en este solar?				
A. Uno		B. Dos		C. Tres

• ¿Hay una relación entre ellos?			
A. Sí		B. No	

(Por favor especifique)
- -

• ¿Cuántos miembros en cada familia? y si sólo una familia vive en este solar, ¿cuántos miembros hay en ella?

A. 2-4		C. 8-10	
B. 5-7		D. Más de 10	

• ¿Cuántos miembros de su familia hablan inglés?			
A. Ninguno		C. Dos	
B. Uno		D. Más de dos	
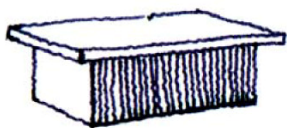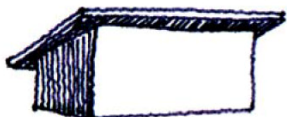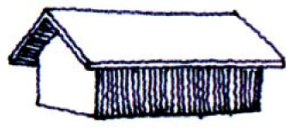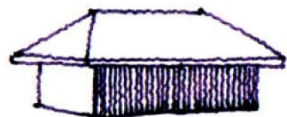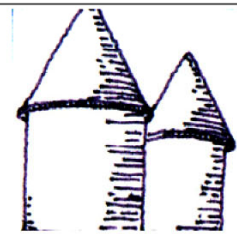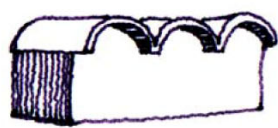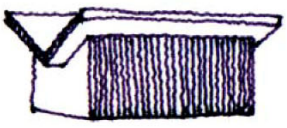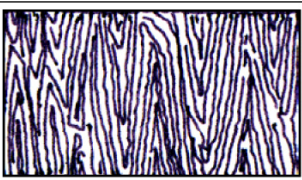
II\2 Conectando (networking) con su pueblo natal
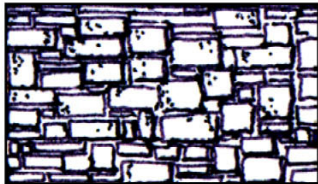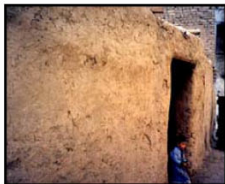
• ¿Cuál es el nombre del pueblo o aldea de donde usted vino?
- -
¿Usted puede señalarlo en el mapa adjunto?   A. sí   B. No Si si ponge un punto en su cuidad o aldea en el mapa

• ¿Qué a menudo usted visita su pueblo o aldea natal?			
A. Una vez al año		C. Varios veces al mes	
B. Cinco-10 al año		D. Otro, (por favor especifique)) -	

• ¿Usted todavía tiene allí familia o parientes? A. Si   B. No
¿Cuáles son sus motivos para sus visitas a su ciudad o aldea?

A. Convivir con la familia allí		C. Interés en regresar a nuestra casa	
B. Pasar los días festivos con los amigos o familiares allí		D. Otro, (por favor especifique) - .	

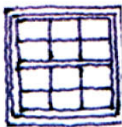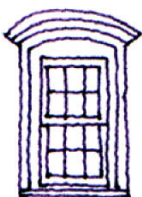| • ¿Pueden sus parientes tomar algunas fotos de las fachadas y patios de su casa con esta cámara desechable y enviársela a usted, si se la proveemos con timbres?
A. Si   B. No |
|---|
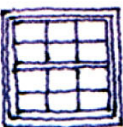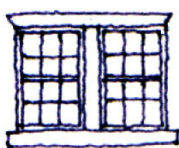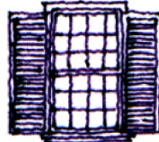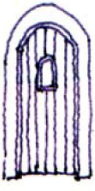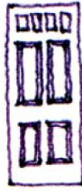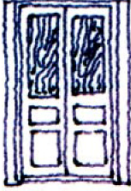
Parta III: Los problemas de vivienda

III\1 La morfología de la vivienda del pueblo natal

Por favor describa los elementos lo siguiente en su casa en su pueblo natal:

III\1\1 Techos		
La forma del tejado (techo)		
1	2	3
4	5	6
7	8	Otro,

El color del tejado

Por favor identifique el color del tejado:

- -

El material del tejado (los materiales): Favor de marcar cuál tenía en su casa

De paja	De piedra	De madera
De materiales modernos	De azulejo	Otro

III\1\2 Paredes

Los colores de la pared externa

Por favor identifique el color de la pared (los colores)

- -

El material de la pared externa: Favor de marcar cuál tenía en su casa

De paja	De piedra	De madera
De estuco	De materiales modernos	Otro

III\1\3   Las aperturas de

La forma de la ventana: Favor de marcar cuál tenía en su casa

Ventana-1	Ventana-2	Ventana-3	La mezcla de 1 y 2	Ventana-4

El "tratamiento" de la ventana

Las varas en cruz / hierro	La contraventana se abre		Las contraventanas no se abren	Los marcos

Las puertas de afuera

Puerta-1	Puerta-2	Puerta-3	Puerta-4

III\1\4 Los elementos significantes		
La terraza (con entrada cubierta): Favor de marcar cuál tenía en su casa		
Lterraza ancha incluida	La terraza pequeña incluida	No incluye terraza

Chimenea tradicional	
Chimenea incluida	No incluye chimenea

El patio (el patio interno)	
El patio adjunto incluido	No incluye el patio adjunto

III\2 Los problemas actuales de la construcción de vivienda

¿Esta casa en la que vive actualmente se construyó en una sola fase?
A. Si
B. No, en varias fases

- ¿Cual de lo siguiente espacios se construyó primero?

Las recamaras	El baño	La sala	La cocina	El área de huéspedes	Otro

- ¿Cuánto tiempo lo tomó realizar la fase actual de construcción?

Menos de un año	Uno-cinco años	Seis-10 años	11-20 años	Más de 20 años	Otro

- ¿Quién construyó esta casa?

Yo mismo y / esposo y esposa	Con la ayuda del pariente	Contrate a un contratista local	Otro

III\3 La Pagando la vivienda actual

• ¿Usted es dueño de esta casa?		
Si		¿Usted todavía está pagando la casa? A. Si Cuánto usted paga normalmente (cada mes)? - - - - - - - - B. No
No		¿Usted paga alquiler? A. Si ¿Cuánto usted paga normalmente (cada mes)? - - - - - - - - B. No
• Otro, por favor especifique		

APPENDIX D

SURVEY INFORMATION SHEET

INFORMATION SHEET
(Sociocultural Structure and Housing Morphology in the Texas-Mexico Borderland)

1- You understand that, this research is identifying the factors influencing housing form in the Colonias of Webb County, TX, and to compare the elements of current housing in three colonias with those of the residents' home-towns. Therefore, the study investigates the community traditions (local gatherings and visits customs), kinship and family type of the residents in Webb County, housing construction, and increment phases. As part of the comparison with home-town housing, the study will identify the form of home-towns housing by photographing houses of some selected subjects. You also understand that the nature of the study will have no risks for any of the subjects included, who are considered to be around 1000 (20 householders in the preliminary study, and 970 for the actual research study). The age of subjects ranges from 18-65 years. You also understand that your participation in this study is voluntarily. The study will be conducted during this year (2004) as part of the fulfillment of the principal investigator's thesis fieldwork.

2- You understand that, you will participate in filling out a survey questionnaire as part of this study on "Webb County" Colonias and the time needed from you to answer all the questions will range 30-35 minutes.

3- You understand that, the benefits of this study are only for the investigator's research and it has no benefits for you.

4- You agree to that, the research will involve some compensation in the form of raffle gifts.

5- You agree on that no data, except the survey questionnaire of "Colonias" householders and the researcher's observations (outdoor-photographs and sketches) of some houses, will be used in this study.

6- You have the right to participate or not in this questionnaire. You also have the right to refuse to answer any (or all) of the questions, and this may cause you to be withdrawn from the total number of subjects without any losses or consequences to you. You also understand that refusing to participate in this study will not affect status in your community.

7- You do participate in this study as a volunteer and you can withdraw at anytime without any consequences.

8- You understand that the study is anonymous.

9- You understand that this research study has been reviewed and approved by the International Review Board-Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Dr. Michael W. Buckley, director of support Services, Office of Vice President for Research at (979) 458-4067.

10- You have read and understand the explanation provided to you. You have had all your questions answered to your satisfaction, and you voluntarily agree to participate in this study.

11- You understand that this form consists of one page.

12- You have been given a copy of this information sheet.

Principal Investigator: Azza M. Kamal
MS Student, Dept. of Architecture
Texas A&M University
(979) 694-1379

Graduate Advisor: Dr. Charles W. Graham
Professor, Dept. of Construction Science
Texas A&M University
(979) 845-0216

LA HOJA DE INFORMACIÓN
(Estructura Sociocultural y Morfologia de Vivienda en Las Fronteras de Texas-México)

1 - Usted entiende que esta investigación está identificando los factores que influyen en el forma de vivienda en las colonias de condado de Webb, TX, y para comparar los elementos de la vivienda actual en tres colonias con aquéllas de las casa en los pueblos de los residentes. Por consiguiente, el estudio investiga las tradiciones de la comunidad (las juntas locales y costumbres de las visitas), el parentesco y tipo de la familia de los residentes en el Condado de Webb, construcción de viviendas, y fases de incremento. Como parte de la comparación con las casa en el pueblo, el estudio identificará la forma de vivienda de los pueblos al fotografiar casas de algunos individuos (personas) seleccionados. Usted también entiende que la naturaleza del estudio no posará ningún riesgo para ninguno de los individuos incluidos, que se considera ser alrededor de 1000 (20 cabezas de familia en el estudio preliminar, y 970 para el estudio de la investigación real). La edad de los individuos es de 18-65 años. Usted también entiende que su participación en este estudio es voluntario. El estudio se conducirá durante este año (2004) como parte del cumplimiento del estudio del campo de la tesis del investigador principal.

2 - Usted entiende que usted participará rellenando un formulario de la encuesta como parte del estudio sobre las Colonias del "Condado de Webb" y el tiempo necesario para contestar todas las preguntas será de 30-35 minutos.

3 -Usted entiende que los beneficios de este estudio sólo son para la investigación del investigador y no tienen beneficios para usted.

4 - Usted acepta que la investigación involucrará alguna compensación en la forma de regalos de una rifa.

5 - Usted está de acuerdo que ningún dato, excepto el formulario de la encuesta del estudio de los encabezados de familia de las "Colonias" y las observaciones del investigador (las fotografías de afuera y bocetos) de algunas casas, se usará en este estudio.

6 - Usted tiene el derecho de participar o negarse a participar en esta encuesta. Usted también tiene el derecho de negarse a contestar cualquiera (o todas) de las preguntas, y esto puede causar que sea retirado del número total de personas sin cualquier pérdida o consecuencias para usted. Usted también entiende que negándose a participar en este estudio no afectarán su posición en su comunidad.

7 - Usted participa en este estudio como un voluntario y usted puede retirarse cuando quiera sin ninguna consecuencia.

8 - Usted entiende que el estudio es anónimo.

9 - Usted entiende que este estudio de la investigación se ha revisado y se ha aprobado por la Junta de Revisión Internacional de Sujetos Humanos en la Investigación, de la Universidad Texas A&M. Para problemas relacionados a la investigación o preguntas con respecto a los derechos de los individuos, usted puede contactar a la Junta de la Revisión Institucional a través de Dr. Michael W. Buckley, Director de Servicios de Apoyo, la Oficina de Vicepresidente para la Investigación a (979) 458-4067.

10 - Usted ha leído y ha entendido la explicación proporcionada a usted. Usted ha obtenido una respuesta satisfactoria a todas sus preguntas, y usted está de acuerdo en participar en este estudio voluntariamente.

11 - Usted entiende que este formulario consiste en una sola página.

12 - A usted se le ha dado una copia de esta hoja de información.

Principal Investigator: Azza M. Kamal
al estudiante graduado, el Departamento de arquitectura, TAMU
amk5713@neo.tamu.edu
(979) 694-1379

Graduate Advisor: Dr. Charles W. Graham
Profesor, el departamento de Ciencia de la construcción, TAMU
cwgraham@archone.tamu.edu
(979) 845-0216

APPENDIX E

SURVEY RECRUITMENT FLYER

A:
LOS RESIDENTES DE

Nosotros apreciamos su participación
en nuestro estudio que investiga:

LA ESTRUCTURA SOCIOCULTURAL Y
LA MORFOLOGÍA DE VIVIENDA EN LA
ZONA FRONTERIZA DE TEXAS-MÉXICO

Su participación en una encuesta de 35
minutos, que lo puede hacer a su
conveniencia, es una parte mayor de una
investigación que está dirigido al
Desarrollo de Albergue en su colonia.
La encuesta se distribuirá durante el
evento de "banco de comida" o dejado
afuera de a su puerta dentro de unos días,
y entonces, se recogerá a los dos días.

Muchisimas Gracias

Si usted tiene cualquier pregunta, comentarios o
necesidad de más detalles, por favor contacte a:

Azza M Kamal
al estudiante graduado, el Departamento de arquitectura, TAMU
amk5713@neo.tamu.edu
Tel. 979-694-1379
Charles W. Graham. Ph.D
Profesor, el departamento de Ciencia de la construcción, TAMU,
cwgraham@archone.tamu.edu
Tel. 979-845-0216

To:
RESIDENTS OF

We appreciate your participation in
our survey that investigates:

SOCIOCULTURAL STRUCTURE AND
HOUSING MORPHOLOGY IN THE
TEXAS-MEXICO BORDERLAND

Your participation in a 35 minutes
survey during the food distribution
event is a major part of a research that
aims Housing Development in your
colonia.
The survey will be distributed during
food bank event or dropped-off at your
door within a few days, and then, will be
picked up two days afterward

THANK YOU

If you have any questions, comments or need more
details, please contact:

Azza M Kamal
Graduate Student, Dept. of Architecture, TAMU
amk5713@neo.tamu.edu
Tel. 979-694-1379
Charles W. Graham. Ph.D
Professor, Dept. of Construction Science,TAMU
cwgraham@archone.tamu.edu
Tel. 979-845-0216

VITA

AZZA MOHAMED KAMAL EL SAYED IBRAHIM

Biographical Sketch

Address

Dept. of Architecture, Texas A&M University, College Station, TX 77843-3137

Education

Institution and Location	Degree	Date	Field of Study
Texas A&M University	M.S.	2005	Architecture
Cairo University, Egypt	Ph.D.	2002	Architecture
Cairo University, Egypt	M.S.	1997	Architecture
Cairo University, Egypt	B.S.	1992	Architecture

Fellowships and Grants

Summer 2004	TAMU, College of Architecture Research and Interdisciplinary Council (CRIC) research grant for Thesis fieldwork in Texas Colonias.
Jul. 2003	Rockefeller fellowship for conference attendance (sponsors: CDS, IACD, Cornell Univ.), Ithaca, NY.
2003/04	Dept. of Architecture Tuition and Fee Scholarship, TAMU.
Spring 2003	International Education Study Grant, ISS, TAMU.
Jul. 2002	Conference attendance fellowship, CDS, Delta State University, Cleveland, MS

Affiliation

Jul. 2003-present	Board Member and North Africa/Middle East Regional Representative of the International Association for Community Development (IACD), Scotland, UK.
Sep. 2002-Jan. 2005	Family Selection Committee, Habitat for Humanity, Bryan/College Station,
Jul. 2002-present	Community Development Society (CDS), Ohio. U.S.A.
1995-present	Society of Egyptian Architects, Egypt.
1992-present	Registered Architect, Egyptian Syndicate for Engineering, Architectural Chapter, Egypt.

Academic Experience

Spring 2004-May 2005	Graduate Assistant	International Student Services, TAMU.
Fall/Spring 2002/2003	Teaching Assistant	Dept. of Architecture, TAMU.
Jan. 1998-present	Lecturer	Dept. of Architecture, Tanta University, Egypt.

Professional Experience

1995- 2001	Project Coordinator	Shehab A. Mazhar Architects & Landscape Designers
Jan.-Sep. 2000	Architect	RED SEA Sharm for Tourism Development
1993-1995	Project Coordinator	Shafie-Sherif Bureau
1992-1993	Architect	Concord Engineers & Contractors