SENSE OF COMMUNITY AND NEIGHBORHOOD DESIGN: A COMPARATIVE
CASE STUDY OF FOUR ARROYO GRANDE NEIGHBORHOODS

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ABSTRACT
SENSE OF COMMUNITY AND NEIGHBORHOOD DESIGN: A COMPARATIVE
CASE STUDY BETWEEN FOUR ARROYO GRANDE NEIGHBORHOODS

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The relationship between the built environment and human behavior has been a topic of debate for decades, increasing significantly since the time of the industrial revolution. The latest arguments in this debate are the claims made by New Urbanists. New Urbanists claim to foster greater sense of community through the use of design. The goal of this study is to explore the relationship between the built environment and sense of community in order to identify which physical properties positively affect sense of community. This thesis not only examines the physical properties claimed to foster sense of community but the social variables that literature has found to also affect sense of community among residents.

Built upon the earlier findings of Glynn (1981), McMillan and Chavis (1986), Nasar and Julian (1995), Talen (1999) and Lund (2002), this study examined residents of four residential developments in the City of Arroyo Grande who were surveyed on their perceived sense of community. The residential developments The Village and Berry Gardens were selected as developments containing New Urbanist design elements. Rancho Grande and Oak Park Leisure Gardens were selected as traditional suburban developments.

The results of this study found two key findings. The Village and Berry Gardens, while containing similar spatial variables, found a noticeable difference in sense of community scores. Residents of The Village felt that their needs and wants were met, that they were active, satisfied members of their neighborhood, and shared an emotional connection with their fellow neighbors. Residents of Berry Gardens were overall less satisfied, less fulfilled, less active and shared less of an emotional connection with their fellow neighbors than all other developments. And while Rancho Grande and Oak Park Leisure Gardens contained noticeably distinct spatial variables, strikingly similar sense of community scores were found. Although Rancho Grande had a density of 2.5 dwelling units per acre and large setbacks its residents felt they could influence one another and belonged in the neighborhood to the same degree as residents of Oak Park Leisure Gardens with 9 dwelling units an acre and shallow setbacks.

Based on the four sense of community indicators used (membership, integration and fulfillment of needs, influence, and shared emotional connection) the results show a lack of relationship between the spatial variables found in each residential development and the sense of community its residents have. The social variables, education, gender, age, and homogeneity, can account for the range of sense of community scores among physically similar developments as well as physically different. This implies that the built environment plays the role of a medium in which all factors influencing sense of community are stimulated rather than determining sense of community.

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CHAPTER 1. INTRODUCTION

1.1 Problem Relevance

Architectural determinism has been a topic of debate for some time now between architects, sociologists, planners and psychologists (Lang 1980). Architectural determinism refers to the belief that changes in the layout of the built environment will result in changes in human behavior, specifically social behavior (Broady, 1966; Boughey, 1968; Lipman, 1974). This belief arose during the mid nineteenth century with the industrial revolution and mass migration to cities. People began to recognize the strong relationship between the unpleasant physical conditions people lived in and their social and psychological conditions (Hall, 2002). This thesis will examine urban design principles as they relate to sense of community.

Sense of community is a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together (McMillan and Chavis 1986). In addition to providing a sense of belonging, a sense of community can bring "emotional aid, social support, companionship and services that support a household and the neighborhood" (Wellman and Wortley 1990). Informal social supports and social networks are important resources for coping with stressors, promoting psychological adjustment, and improving the quality of life (Belle 1982). Literature suggests physical design may be media or stimulants

of sense of community but not variables in themselves as sense of community is not created by any one factor (Talen, 1999; Li, 2008). Additional factors researchers have found that contribute to sense of community include: homogeneity, age, income, gender, length of residency, expected length of residency, educational attainment, the presence of children, shared values, loyalty, labor force participation, stage of life, home ownership and number of neighbors known by first name (Talen, 1999; Glynn, 1986, 1981; Burkhart, 1981; Campbell and Lee, 1992; Gans, 1962; Haggerty, 1982; Fischer, 1976; Kasarda and Janowitz, 1974).

Neotraditional developments are the newest addition to planning aimed at enhancing sense of community (Nasar, 2003). New Urbanism or Neotraditional developments promote the creation of diverse, walkable, compact, vibrant, mixed-use communities. New Urbanist or Neotraditional developments embraced and advocated for sense of community in the built environment through the use of physical design properties (Lund 2002).

Design concepts found in neotraditional developments include narrower streets, front porches, rear garages that are accessed by alleys, dense residential, smaller lot sizes, civic uses within a quarter mile, and street patterns that provide a variety of path options for both automobiles and pedestrians (Nasar 2003). This school of thought claims that the individual buildings work together to form coherent public spaces, where people will see and talk with one another thus

positively affecting sense of community (Langdon 1997). Neotraditionalists also believe that streets with lower levels of traffic support greater pedestrian use and neighbor contact (Appleyard & Lintel 1972). While empirical research has been conducted on such claims in studies done by Plas and Lewis (1996), Lund (2002), and Brown & Crooper (2001), there is not enough empirical evidence to suggest that all new urbanist claims are accurate. These studies have compared neotraditionalist subdivisions with standard suburban subdivisions through the use of surveys, interviews, and personal observation. The use of controlled and dependent variables has allowed for the relationship between the physical design elements of neotraditional developments to be analyzed against their sense of community.

A clear and empirically validated understanding of sense of community can provide the foundation for planners to develop programs that meet their stated goals by strengthening and preserving community (McMillan and Chavis 1986). Planners can be more effective in creating thriving, successful, engaging communities that all will enjoy, if they are able to identify which urban design principles effect social behavior in a positive way. Designing neighborhoods that foster social interaction will inherently have a higher sense of community (Lund 2002). By identifying design principles that instill values of neighborliness, support and sense of community, one can learn which design principles create hostile and isolated communities and thus limiting their existence.

1.2 Research Objectives

This thesis employs a comparative case study that will investigate the various physical design properties that contribute to sense of community. This study particularly focuses on the physical design properties found in New Urbanist developments. In addition to investigating physical contributors, social variables will be also be examined as possible contributors to increased sense of community. The objectives of this study are (i) to compare sense of community among four physically distinct neighborhoods, and (ii) analyze possible social and physical variables that contribute to the fostering of sense of community.

1.3 Research Questions

The following research questions fulfill the objectives of this study:

1. How do the sense of community indicators compare among the four physically distinct neighborhoods?
2. Do the physical design properties claimed by New Urbanists to foster a higher sense of community positively relate to sense of community?
3. What social variables contribute to a sense of community?

CHAPTER 2. LITERATURE REVIEW

2.1 Overview

We live in an era of urban problems. Many authors in planning and urban design literature blames today's urban ailments on the declining sense of communities. In contemporary planning literature, some authors discuss sense of community; however, these authors do not necessarily define or discuss what sense of community is. Rather, they are discussing urban design principles that will foster "sense of community" (Duany and Plater-Zyberk, 1992; Langdon, 1997; Hall and Porterfield, 2001; Calthorpe, 1993). Throughout the design literature there is a discrepancy in the fact that there is no empirical measure of the correlation between a sense of community and characteristics of neighborhoods. There is a lack of a clear and universally accepted definition of sense of community partly because there is a debate over the components or dimensions that define sense of community. The Social Sciences, particularly sociology and psychology have empirically studied and investigated "sense of community" with indicators such as membership, influence, integration, fulfillment of needs, shared emotional connection, community structure, similarities in education, income, and race, home ownership, the presence of children, the number of neighbors known, the number of years spent in a neighborhood, and the years expected to live in the neighborhood (Glynn, 1981; McMillan and Chavis, 1986; Buckner, 1988; Unger and Wandersman, 1985; Sarson, 1974).

2.2 Historical Reflections on Community

The professionals in the fields of planning, architecture, historic preservation, and crime prevention are advocating for the development of sense of community as a means of solving urban problems. Nasar and Julian (1995) report that social theorists blame industrialization, large-scale bureaucracies, our culture of mobility, convenience, and privacy for the decline in the sense of community. The idea that sense of community is on the decline, as Sarason (1974) points out, is a common theme in contemporary society. Social critics for sometime have been concerned over the changing nature of community (Glynn 1981). Durkheim (1964), in the latter half of the 19th century observed community relationships shift from being based on shared interests and values to one built upon functional interests. A contemporary of Durkheim, Tonnies (1957) identifies a similar phenomenon in the changing nature of community which he articulates in his concept of “gemeinschaft” and “gesellschaft.” The works of Cooley (1909), along with McClenahan (1929, 1949), and Warren (1963) have marked the 20th century, each with the recurring argument of the disappearing nature of traditional social networks and the impact it is having on sense of community.

By the mid 20th century there was a growing interest in the social life of urban neighborhoods (e.g. Gans, 1962; Jacobs, 1961; Lee, 1968).

Because of the diverse roles of neighborhoods and life styles of residents there became an apparent need for urban and community research of social relations beyond the neighborhood and into wider society (Unger and Wandersman 1985). It had become clear through the use of social network analysis that as with advancements in technology, communication, transportation and life styles, the city had become “smaller” where the neighborhood had less of importance for its residents than previously (Wellman and Leighton, 1979). As advancements in technology are made non-spatial factors become increasingly important in the formation of social relationships (Glynn, 1986).

A community of interest, as Burkhart (1981) studies is one in which a social group is an affiliation of like-minded homogeneous people rather than heterogeneous. When residents are purposely seeking like-minded individuals to interact with the neighborhood can no longer satisfy residents' needs solely on physical space. Lyon (1987) states, as do Nasar and Julian (1995) that community of interests are aspatial or extended-space communities that can include churches, jobs, professional groups or committed lifestyles. Durkheim (1964) witnessed a sense of community developing around a series of interests and skills more so than with

locality. The 'community liberated' paradigm views community free from the constraints of their local space allowing relationships to be formed on a more regional level through complex social networks (Wellman and Leighton, 1979).

2.3 Defining Community

It must be recognized that sense of community has been a topic of study for the fields of community psychology, environment-behavior, urban sociology, and planning (Talen 1999). There has been no generally accepted definition of sense of community because of its multidimensionality; however, the most accepted definition comes from McMillan and Chavis (1986). In order to understand what sense of community is one must understand what a community is: the term community, while it seems obvious is actually quite complex with variety of meanings. Webster's II The New Riverside University Dictionary defines community as:

1a: a group of people residing in the same locality and under the same government

1b: the area or locality in which such a group resides

2a: a group or class having common interests

Similar to Webster's II The New Riverside University Dictionary, Gusfield (1975) categorizes two major uses of the term community. There is a territorial and geographical notion of community that includes the physical space such as the neighborhood, town, and city. In this interpretation community is spatially defined;

McMillan and Chavis (1986) refer this type of community as a community of place. The second use of the term applies to the “quality of the character of human relationships” focusing much more on the relationships of the individuals than the space itself. An example of this second type of community is a community of interests as described earlier. Gusfield argues that the two uses of the term are not mutually exclusive. Fischer (1982) notes that communities in today’s modern life are often layered: where people have multiple affiliations both territorial and traditional.

It is easy to understand how a person could have a sense of community in the neighborhood they live in and have an additional sense of community through a church organizations or professional group they belong to. The communities that people belong to begin to add up: each with its own purpose, membership, values, needs, and location, illustrating the multidimensionality of community. With a number of community types and no universally accepted definition of community there becomes a number of factors that make up sense of community and variables that can affect it.

While New Urbanist may propose the built environment can create a sense of community (Duany & Plater-Zyberk, 1991; Calthorpe, 1993; Langdon, 1994) there is some debate. The debate is based on the relationship between the physical space and the creation of community. Researchers agree that physical space has an impact on the formation or disintegration of a sense of community;

however, many researchers feel that the role of physical space in the formation of community is overplayed (Talen 1999). Burkhart's (1981) study on community of interests and Wellman and Leighton's (1979) community liberated paradigm are prime examples of this.

Researchers have found that non-environmental factors such as homogeneity, age, income, gender, length of residency, expected length of residency, educational attainment, the presence of children, shared values, loyalty, labor force participation, stage of life, home ownership and number of neighbors known by first name, can contribute to a community's sense of community (Talen, 1999; Glynn, 1986, 1981; Burkhart, 1981; Campbell and Lee, 1992; Gans, 1962; Haggerty, 1982; Fischer, 1976; Kasarda and Janowitz, 1974). Membership, influence, integration and fulfillment of needs and shared emotional connection, as they were discussed earlier, can also make up non-environmental factors that contribute to sense of community (McMillan and Chavis, 1986).

Talen (1999) used the non-place argument to link the non-environmental factor of homogeneity to the idea that locale is less of a factor in sense of community than homogeneity. Literature reveals that homogeneity is the common factor in the formation of community. According to Burkhart (1981), communities, specifically communities of interests seek out an affiliation with homogeneous and like-minded people. Carmon (1976) draws two conclusions about the impact of homogeneity on sense of community and the built environment based on the

social research findings of Festinger, Schachter and Back (1950), Merton (1948), and Willimas et al. (1956): “the more homogenous the group of residents, the higher the potential of neighbourliness” and “the higher the homogeneity, the more impact the physical setting of the housing units have on the social relationships between residents” (54). Carmon (1976) clarifies that these findings are not generalizable as the neighborhoods sampled do not represent the diversity of residential areas.

Unger and Wandersman (1985) found that resident who resided in homogeneous neighborhoods find it easier to be aware of their neighbors, and to know who belongs and who does not; paralleling McMillan and Chavis’ (1986) concept of membership and boundaries. Lang (1980) mentions a study conducted by Gans (1967) of friendship formation patterns in Levittown, in which Gans finds friendship formation patterns “to have been based more on the perceived homogeneity of the people involved and their need for mutual assistance [rather than propinquity of neighbors]. The dimensions along which homogeneity is important are socioeconomic status and stage in life cycle as well as factors such as similarity in values regarding child raising, leisure time interests, and general cultural preferences” (149).

Campbell and Lee (1992) accredit variables such as socioeconomic status, age, gender and a resident’s stage in life to the social interaction and the formation of community. For example, Campbell and Lee (1992) suggest that persons of high

economic standing tend to be more socially integrated than those who reside in low-income neighborhoods typically diverse in race, occupation and housing tenure. Such low-income neighborhoods discourage the formation of neighbor relations thus reducing the size of residents' neighborhood networks. The variable age is said to have both a negative and curvilinear relationship to social interaction, meaning that "middle-aged adults will have larger, more intense, and more multiplex networks than their younger and older neighbors" (Campbell and Lee, 1992, 4).

In terms of gender, women traditionally have wider neighborhood networks more intense relationships with their neighbors and greater social interaction than men thus perhaps a greater sense of community (Campbell and Lee, 1992; Willmott, 1987; and Fischer, 1982). A resident's stage in life is perhaps another variable influencing sense of community and social interaction. Campbell and Lee (1992) recite the views of social scientists Durkheim (1966), Danigelis and Pope (1979), Greer (1972) and Liebow (1967) who feel that marriage and parenthood fosters greater neighborhood attachment. Residents increase their investment and participation in their neighborhood and larger community when they have a family. Social networks of those who are married and have children are said to mimic the social networks of women, large, intense and multiplex (Fischer, 1982; Hurlbert and Acock, 1990; and Willmott and Young, 1960).

The length of time a resident has lived in a neighborhood and the length of time a resident expects to live in a neighborhood is another variable to consider when evaluating what factors contribute to residents' sense of community. In a study conducted by Buckner (1988), a significant predictor of sense of community and social interaction was length of residency. Buckner (1988) found there to be a positive relationship between years lived in neighborhood and sense of community/ social interaction. In addition to length of residency, expected length of residence can impact residents' sense of community. Glynn (1981) found expected length of residency to be an important contributor to a resident's psychological sense of community. When there residents do not expected to live in a community for a long period of time creates a population at risk and associated with that is a decrease in sense of community. Personal investment and involvement diminishes when expected length of residency is limited.

As more studies are conducted variables and factors begin to surface in multiple studies giving reason to believe non-spatial factors influence sense of community. One such example is that of Glynn's (1981) and Keller's (1968) finding of autonomy's influence on sense of community. McMillan and Chavis' (1986) additionally found similar results as Hunter (1975) with their shared emotional connection element and Hunter's (1975) finding of shared values. While additional research in other samples is needed to confirm, Buckner (1988) found a resident's educational level to be negatively associated to a resident's sense of community. As more studies are done on the factors of sense of

community it becomes apparent that an array of non-spatial factors influence sense of community.

2.4 Neotraditional in Design

The urban design movement known as New Urbanism or Neotraditional arose in the early 1980s. New Urbanist design standards were modeled after urban design standards prominent before the use of the automobile. Neotraditional developments promote walkable neighborhoods with a range of housing types and jobs. Develops typically include a discernable neighborhood center in which all residents are within a quarter of a mile. New Urbanist developments also include a variety of housing types so that people from all backgrounds can find suitable housing. Streets within New Urbanist developments are typically narrow in order to slow traffic and shaded by trees to support pedestrian and cyclist use.

New Urbanists claim there is an increase in sense of community based on the design of the built environment; however, they do not appear to offer empirical evidence to support their argument. New Urbanist designers like Andres Duany and Elizabeth Plater-Zyberk challenge conventional zoning, favoring codes that create traditional patterns of placemaking where sense of community is present (Duany and Plater-Zyberk, 1991).

Duany and Plater-Zyberk (1991) work with developers with the hope of persuading them with alternatives found in traditional communities in order to

avoid undifferentiated sprawling developments. Duany and Plater-Zyberk's work recognizes design affects behavior and that structure and function are interdependent. They believe that by recapturing the advantages of the town, communities can be more sociable and manageable. The built environment is said to be constructed in such a way that it fosters greater social interaction which can lead to greater sense of community.

Design concepts found in neotraditional developments include narrower streets, front porches, rear garages that are accessed by alleys, dense residential, smaller lot sizes, civic uses within a quarter mile, and street patterns that provide a variety of path options for both automobiles and pedestrians (Duany and Plater-Zyberk, 1991; Nasar, 2003). Hall and Porterfield (2001) prescribe streets with smaller volumes of traffic with a more connectivity, parallel parking wherever feasible, relaxed setbacks, a variation in height, architecture, and landscape to be fundamental in town design. In addition Hall and Porterfield (2001) argue that paths, edges, districts, nodes, landmarks, axial design, hierarchy, transition elements, and enclosures are the building blocks and tools needed to create livable and dynamic communities.

Duany and Plater-Zyberk (1991) propose that these identified physical elements are the basic rules in making any town. Neotraditionalists claim that the individual buildings work together to form coherent public spaces, where people will see and talk with one another thus positively affecting sense of community (Langdon

1997). An example of such claims include the absence of garage dominated façades. Without the presence of garages there is greater casual surveillance and space to invest time (Brown & Crooper 2001). Another example is homes in close proximity to one another and the street inevitably foster social interaction due to their of shear proximity (Langdon 1997).

Neotraditionalists also believe that streets with lower levels of traffic support greater pedestrian use and neighbor contact (Appleyard & Lintel 1972). These design elements are claimed to be spatial factors that affect sense of community. Studies have been done empirically to support these claims. Empirical evidence has been found on such claims in studies done by Plas and Lewis (1996), Lund (2002), and Brown & Cooper (2001). These studies have compared neotraditionalist subdivisions with standard suburban subdivisions through the use of surveys, interviews, and personal observation. The use of controlled and dependent variables has allowed for the relationship between the physical design elements of neotraditional developments to be analyzed against their sense of community.

Lund (2002) investigates the relationship between pedestrian environments and sense of community in both a neotraditional and modern suburban neighborhood. Lund's study focused on addressing two questions: whether pedestrian environments found in neotraditional neighborhoods actually have higher a sense of community than more automobile oriented modern suburban

developments; and what actually influences sense of community. Lund chose two Portland, Oregon neighborhoods with controlled variables such as median household income, access to a local shopping district, topography, and access to highways. The spatial factors chosen to assess sense of community include: street and sidewalk connectivity, housing mix, housing setbacks, lots size, presence of front porches, pedestrian amenities. Lund chose to measure residents' sense of community using Nasar and Julian's (1995) Psychological Sense of Community (PSC) Scale due to its practicality and reliability due to the spatial constraints and the ability to detect differences across neighborhoods.

A total of 520 household surveys were distributed containing Nasar and Julian's (1995) PSC scale, of these only 22% were returned from the neotraditional neighborhood and 18% were returned from the modern suburban neighborhood. The results concluded that the neotraditional neighborhood had a significantly higher sense of community compared to the modern suburban neighborhood. Variables were evaluated with three different models; household demographics, objective evaluation and subjective evaluation. The only significant demographic variable influencing sense of community was the presence of young children.

This finding is contrary to past research where length of residency can have a significant influence on sense of community (Glynn, 1981; Buckner, 1988). The perception of walking in the subjective evaluation was found to have the most correlation between sense of community and the pedestrian environment. Where

residents had positive perceptions of walking in the neighborhood there was found to be a higher sense of community. Lund's (2001) study found that neotraditional neighborhoods with more pedestrian friendly design elements had a greater sense of community. While the findings support New Urbanist claims, there were limitations in her study. Lund points out that the most obvious limitation was the small sample size and the low response rate. Another limitation found in her study was the measure itself. The Nasar and Julian's (1995) PSC scale only measured the pedestrian environment factor of community and other research has clearly determined that community is influenced by a number of other factors (Unger and Wandersman, 1985).

Brown and Cropper (2001) conducted a similar study to Lund's (2001) where they examined whether residents in New Urbanist subdivisions actually experience a stronger sense of community than residents in standard subdivisions. Social demographic variables were controlled for to the best extent possible with the help of realtors and planners. The two neighborhoods were located ten miles from Salt Lake City, Utah, built between the years of 1994 and 1996, and sold homes within the same price range. By controlling for social demographic variables the difference in sense of community would have a greater likelihood of being a correlation to the design of the neighborhoods.

Brown and Cropper (2001) essentially asked several questions in their study. Do residents of New Urbanist subdivisions experience stronger sense of

community? Does density create proximity problems that erode these qualities? Do residents in New Urbanist subdivisions admit greater informal interactions and greater use of public facilities than standard suburban subdivisions? And finally, do residents in New Urbanist subdivisions favor accessory apartments, mixture of residency types, alleyways more than standard suburban subdivisions.

Because telephone interviews did not produce high response rates, 81 households were randomly selected from the standard suburban subdivision and all 81 households in the New Urbanist subdivision were chosen to complete a mailed questionnaire which yielded an average of 66% response rate. The questionnaires were able to produce seven composite variables: sense of community, favors diversity, neighboring behaviors, outside use, pro-apartment attitudes, garage/yard satisfaction, and pro-alley attitudes. The seven composite variables had operationalized concepts from the research questions (Brown and Cropper, 2001).

Once the variables had been operationalized the results of the two subdivisions could now be compared by multivariate analyses. The results conclude that some of the New Urbanist claims could be validated but not all. New Urbanist and standard suburban subdivisions did not differ significantly when it came to sense of community. While the standard suburban subdivision had 47% larger lots and cul-de-sacs they reported similar levels of sense of community as grid streets and small lot New Urbanist subdivisions.

These results contradict the results found by Lund (2002). Brown and Cropper (2001) did however find that New Urbanist subdivisions had higher neighboring behavior such as visiting, speaking, watching their neighbor's homes, possibly because of the greater reported use of outdoor activities. New Urbanist residents report spending more time outside walking or using the outdoor amenities perhaps because these amenities are located in closer proximity than in standard suburban subdivisions. Other differences found include a greater favor towards alleyways behind their homes and the right to have an accessory apartment on their property. While New Urbanist residents had complaints about some of the specifics regarding these two they were still had a greater acceptance than in standard suburban subdivisions. This study used design factors to empirically test the New Urbanist claims about sense of community by comparing two subdivisions and found no significant difference.

A study done by Nasar (2003) found similar results when testing two New Urbanist claims. Nasar (2003) attempted to test the claims that neotraditional developments show lower levels of automobile use than traditional suburbs; and that neotraditional developments have a higher sense of community than traditional suburbs. Geographical Informational Systems (GIS) were used to identify two neighborhoods in Westerville, Ohio to test these claims. The neighborhoods were selected on the basis that (i) they had low land-use diversity and only had housing or housing plus park space within a quarter mile and (ii)

they have high land-use diversity and four different uses: residential, mixed urban/ commercial, institutional, and recreation within a quarter mile (Nasar 2003).

Residents were asked to complete a survey that elicited the following information: sense of community, auto use, the reasons why the resident chose to that neighborhood, and demographics. Nasar and Julian's (1994) 15-item Neighborhood Sense of Community (NSOC) scale was used to measure the neighborhood's sense of community. To measure the auto usage of residents an auto use scale was created from Appleyard's (1981) neighborhood survey. Sixty randomly selected interviews were conducted in each of the two neighborhoods. In order to mitigate questions affecting one another the survey plan had respondents only respond to a portions of the survey and others respond to the survey in its entirety. The demographics of respondents in both neighborhoods were found to be similar which allows the study to look only at the physical design elements said to impact sense of community.

Findings conclude that higher density mixed-use developments do in fact have lower auto use as New Urbanists claim. The reduced use of the auto and higher density mixed-use development does not translate into a higher sense of community based on the results of this study. There was no difference found in the sense of community in both the neotradtional development and the traditional suburb. While Nasar (2003) uses only subdivision typology to test New Urbanists'

claims he does acknowledge personal attributes along with individual physical features affecting sense of community.

Plas and Lewis (1996) conduct a three-phase qualitative study in which they acknowledge that there have been very few studies done to empirically and systematically test the relationships between sense of community and environmental design. Their study sampled both residents and workers of Seaside, Florida. Seaside, Florida is New Urbanist community with a majority of its residents being Caucasian with incomes in the upper 20% of American household income (Plas and Lewis, 1996). The town is planned out with street hierarchy, low fronted picket fences, and wide porches. Seaside is a prime example of a New Urbanist community that is glorified for its design influencing sense of community with no empirical evidence. Plas and Lewis' (1996) chose a multifaceted approach to investigate the relationships between environmental factors and a shared sense of community. Plas and Lewis (1996) used McMillan and Chavis' (1986) sense of community indicators; perceived membership, influence, fulfillment of needs, and shared emotional connection to evaluate the possible relationship. Because this town was intentionally planned to foster sense of community environmental factors were examined such as the urban code, architectural code, and the urban planning philosophy that has guided the town. As stated previously a multifaceted qualitative approach was taken; this approach included heuristic or self-experience research, formal pre-understanding, and finally structured interviews.

The first phase of the study was personal observation of the town and its residents. The second phase of the study included two, six hour walks. On the first walk the researcher would walk through the town engaging in conversation, noting comments and feelings, it was the goal to simply experience the town with no preconceived notion. While the first walk did not intend to elicit variables, residents frequently mentioned them in casual conversation. The second walk was more structured and was meant to elicit the seven variables of interest. The third and final phase of the study involved formal interviews with a sample of 125 people in three subgroups of the population: owner-residents, renter residents, and people who worked in the town. Interviews that made positive statements regarding the seven variables were coded into nine categories: town design, architecture, town philosophy, membership, influence, needs, and connections. The two remaining categories coded interviews that had variables that could be related to sense of community but not included in the other variables listed and information that was not relevant.

The results of the interviews concluded that 70% of all people who live, work and visit Seaside, Florida cite the sense of community variables for their reason for being there. Interviews found that those interviewed would often connect environmental factors with the sense of community factors indicating that those sampled view environmental factors responsible for fostering sense of community. Loyalty was found to be another possible sense of community factor

not previously listed. Plas and Lewis (1996) find that the results of this study strongly suggest that the town's environment can be planned to foster sense of community; in addition to supporting the hypothesis that environmental factors can have a critical impact on the creation of sense of community in society.

2.5 Sense of Community in the Social Science

Social science has attempted to empirically test such claims made by new urbanists through operationalizing sense of community. Hill (1996) argues that there are two ways of approaching sense of community, the factor analytical approach and the theoretical approach. The first approach requires a measure of sense of community be developed, data be collected based on that measure, and then the data be analyzed for common groupings. One of the most popularly cited and earliest attempts to objectively measure sense of community is Glynn (1981). He developed a 60 item scale that tapped six different dimensions that include: objective evaluation of community structure, supportive relationships in the community, similarity and relationship patterns of community residents, individual involvement in the community, quality of community environment, and community security (Hill 1996).

Hill's study had four primary goals "(1) to attempt to identify a range of behaviors, attitudes, and community characteristics which could be said to represent psychological sense of community; (2) to devise a reasonable method(s) to measure these behaviors, attitudes, and characteristics; (3) to attempt to address

the relationship between psychological sense of community and two qualities thought to most effect the erosion of psychological sense of community. . . and satisfaction with life in the community; and (4) given a relationship between psychological sense of community, satisfaction, competency and community characteristics, to delineate ways of fostering and bolstering psychological sense of community” (Glynn 1981). Glynn’s 60 item scale was composed of three sections eliciting demographic data, present attitudes and behavior statements through a 5-point Likert scale, and respondent’s community participation, awareness, and competence thru open –ended items. Glynn identified 202 behaviors or subconcepts relating to sense of community which resulted in 120 items being developed to represent real and ideal characteristics.

Respondents from the communities of Greenbelt and Hyattsville, Maryland as well as Kfar Blum, Israel were ultimately selected to be measured. Community selection was done on dissimilarity of characteristics such as: geography, patterns of interaction, history, function, and autonomy. The results found there to be higher real levels of sense of community in Kfar Blum than those found in the Greenbelt and Hyattsville. Actual sense of community can be strongly predicated by the expected length of community residency, satisfaction with the community and the number of neighbors that could be identified by first name. In addition to these results Glynn found there to be a positive relationship between the ability to function competently in the community and sense of community. No

difference was found between the three communities when it came to the ideal scale.

Nasar and Julian (1995) support both the validity and reliability of Glynn's (1981) measure; however, they point out the shortcomings it has for the use of planning. According to Nasar and Julian (1995), Glynn's 60 item scale would be too costly to use in assessing sense of community. The second critic of Glynn's scale involves the environmental scale it was conducted on. While Glynn's scale is conducted at the community level it is believed that residents experience a sense of community at the smaller neighborhood and even block level (Banerjee and Baer, 1978; Appleyard, 1981).

Nasar and Julian (1995) attempt to address the shortcomings of the Glynn (1981) measure of assessing the psychological sense of community by modifying the measure into a short form that would be used at the neighborhood level. In order to ensure reliability, Nasar and Julian (1995) conducted the Chronbach Alpha on the Glynn (1981) measure along with the four short form instruments they created. The short form instruments had scales of 28 items, 19-items, 15-items, and 11-items. Their findings conclude that scales larger than 28-items had lower reliability and that it was their 11-item scale that produced the best reliability, convenience, and broad measure in assessing the sense of community at a neighborhood level.

In addition, Nasar and Julian (1995) use their short form to see if there is a greater difference in the discriminations among the social and physical conditions of the immediate neighborhood. Glynn (1981) tested the discriminatory impact of his measurement on two extremely different localities, Israeli residents vs. Maryland residents. Nasar and Julian (1995) tested their discriminatory impact across different neighborhoods and housing conditions. Their tests show that the 11-item scale had greater inter-item reliability in the two contexts it was tested in: upper-income suburban homeowners and low-income student renters in urban apartment both in the state of Ohio. Their goal was to create a valid and reliable short scale that can measure the effects of factors such as casual contacts, social support, fear of crime, territoriality, and community size on sense of community. A scale capable of doing this would allow neotraditional developments to be tested empirically against their claims of achieving sense of community, and allow planners to evaluate the impact of programs and plans on a neighborhoods sense of community (Nasar and Julian, 1995).

Another example of factor analytical approach to sense of community can be identified in the work of Riger and Lavrakas (1981). Through a factor analysis of six items: the ability to identify neighbors, feeling part of the neighborhood, number of neighborhood children known to the respondent, years of community residency, whether one's home is owned or rented, and expected length of residency, Riger and Lavrakas (1981) found two empirically distinct but correlated factors of community attachment: social bonding and environmental

rootedness. These factors allowed Riger and Lavrakas (1981) to identify four groups of citizens in which they found age to play a significant role in determining attachment.

2.6 Measuring Sense of Community

The one literary example of a theoretical approach to sense of community can be found in the popularly cited article by McMillan and Chavis (1986). McMillan and Chavis (1986) definition of sense of community reads as follows:

a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that member's needs will be met through their commitment to be together.

Their proposed definition of sense of community is made up of four elements, each of which have subelements that dynamically work together to create and maintain sense of community. The four elements that make up sense of community include: membership, influence, integration and fulfillment of needs, and shared emotional connection.

2.6.1 Membership

The first element McMillan and Chavis (1986) propose is membership.

Membership is the product of investing part of oneself to be a member of a group, where one has a feeling of belonging. Membership works because it has established boundaries which clearly define who is a member and who is not (Bernard, 1973). Group boundaries can be identified in language, dress, and

rituals; however, sometimes boundaries may be so subtle that only residents are able to recognize them (Berger and Neuhaus, 1977). McMillan and Chavis (1986) explain further that emotional safety is a product of establishing boundaries. The use of boundaries is a way of protect personal space. Boundaries allow there to be structure and safety to members to the group which ultimately protect the intimacy of the group.

It is important that members feel as though they belong or identify with the group and believe that they have a certain place within the larger group. Each member must feel to some degree acceptance by the group and have the readiness to make some kind of sacrifice for the sake of the group. It is through one's sacrifices and personal investments that contribute to one's sense of belonging to the group. The emotional connection that develops out of one's personal investment to the group plays a significant role in the sense of community that one feels (McMillan and Chavis, 1986).

The work one does for the sake of the group allows one to feel as though they have earned their place as a member of the group in addition to making membership more valuable and meaningful (McMillan 1976). Peterson and Martens (1972) work is a prime example of the impact of personal investment on sense of community and membership as it is visible in pledges for college sororities and fraternities. Another feature of membership and boundaries is the notion of a common symbol system. Understanding the common symbol system

of a community is essential for understanding the community itself. Nisbet and Perrin (1977) state that “the social bond is the symbolic nature of all true behavior or interaction.” To summarize the McMillan and Chavis (1986) membership element there are five attributes: boundaries, emotional safety, a sense of belonging, identification, personal investment, and a common symbol system.

2.6.2 Influence

The second element McMillan and Chavis (1986) propose is influence. Influence within a community works two ways: the community can influence the individual and the individual can influence the community. Studies convey that these two opposing forces can work simultaneously (Grossack, 1954; Taguiri and Kogan, 1954). McMillan and Chavis (1986) used group cohesiveness research to suggest that in communities where members feel influential there is greater attraction. In addition they found that there is a significantly positive relationship between the cohesiveness of a group and the influence a community has on its member to conform. Consensual validation, the need to know that what is seen, heard, and experienced is also seen, heard, and experienced by others drives the balance between conformity and uniformity. As stated before, influence can work in two ways: a member influence on a community and a community can have influence on a member. McMillan and Chavis suggest that in tight knit communities one can expect to see the two forces working simultaneously.

2.6.3 Integration and Fulfillment of Needs

The third element McMillan and Chavis (1986) propose is the integration and fulfillment of needs and can be translated it into a more common term known as reinforcement. Reinforcement has a large impact in field of behavioral research as it is a motivator for behavior. A reward is one example of reinforcement and it is obvious that rewards will impact behavior, not just on an individual but for a group as well. For individuals to maintain an association with the group and a group to maintain a sense of togetherness it must be rewarding in some manner for both the members and the group (McMillan and Chavis, 1986). Ultimately people do what meets their own needs and serves their best interests. People tend to associate with people and groups that have the most to offer them whether it is status or competence. Shared values allow for people to have their emotional and intellectual needs met. People with similar values, beliefs, priorities, and needs can come together to satisfy these needs and create a cohesive community. McMillan and Chavis (1986) found that strong communities have the primary function be reinforcement and have the ability to bring people together to not only meet individual needs but the needs of others.

2.6.4 Shared Emotional Connection

The fourth element McMillan and Chavis (1986) propose is a shared emotional connection. The key to this element is understanding the word “shared”.

Members of the community must have some kind of shared experience, identity, history, or value. It is in what is being shared that defines the strength or sense of

a community. McMillan and Chavis (1986) identify principles that are important to a community's shared emotional connection. The first principle they identify is the contact hypothesis. The contact hypothesis states that the more times people interact with one another the more likely they will become close (Allan and Allan, 1971; Festinger, 1950). The second principle identified is the quality of interaction. It is believed that the more positive the experience and relationship is the greater the bond (Cook 1970). The effect of honor and humiliation on community members is other principle identified. Rewards and humiliation in the presence of others can have a significant impact on how the community is viewed by others. Other principles they identify include closure to events, shared valent event hypothesis, investment and the spiritual bond.

It is through the combination of all four elements and each of their subelements that make up the McMillan and Chavis (1986) definition of sense of community. When each of these elements and subelements are working together sense of community is being created and maintained.

The literature presents a number of different factors influencing sense of community, both social variables as well as physical design elements; however there may be a number of intermediate variables such as homogeneity, income, and gender that effect sense of community. The physical layout and design of a neighborhood may not directly affect the behavior of its residents but it may play a role in stimulating other factors that can (Talen, 1999).

CHAPTER 3. METHODOLOGY

3.1 Overview

This chapter will explain the methods chosen to evaluate the relationship between sense of community and the built environment. The research methods chosen in this study were developed to measure the sense of community within residential developments in addition to identifying the different physical characteristics found within such residential developments. The objective of this study and the methods used are to identify the extent of the relationship, if any, between residents' sense of community and the residential development's built environment. The primary focus of the study is to compare the relationship between of sense of community and the built environment through the use of four case studies. This study employs a case study methodology in which two New Urbanist and two conventional neighborhoods are cross-compared.

3.2 Case Selection Criteria

A comparative case study research design was used in this study to examine the relationships between neighborhood design and sense of community. Four distinct residential neighborhoods in the city of Arroyo Grande, California were selected to be measured and analyzed based on their degree of sense of community and urban design features. Neighborhoods were initially selected throughout the city that bore a distinct neighborhood identity and urban design features; the four selected case studies were then chosen out of the original nine

neighborhoods based on specific criteria. Appendix A identifies all nine neighborhoods considered for this study, including the four selected. The four neighborhoods selected include three single family residential developments and one multi-family town home development. The four neighborhoods utilize various urban design principles in order to examine the relationship between sense of community and urban design. Two of the neighborhoods can be classified as having neotraditional design elements that are claimed to bring sense of community such as front porches, park strips, street trees, and a lack of garage dominated facades, while the remaining two neighborhoods do not have these characteristics.

The selection of these neighborhoods was controlled to the best extent possible. All four of the neighborhoods are located in the city of Arroyo Grande, California. Residential developments were also chosen in Arroyo Grande because of its more stable population base compared to neighboring municipalities. According to the 2000 U.S. Census Bureau, Arroyo Grande's owner occupied housing units outnumber renter occupied units 2.3:1 as opposed to the city of San Luis Obispo where renter occupied units outnumber owner occupied units by 1.4:1 (Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrices H3, H4, H5, H6, H7, and H16). Further selection was based on distinct urban design features such as: housing setbacks, lot size, presence of front porches, presence of garages, presence of street trees and park strips, distance between front doors, density, and street width. Each of the nine neighborhoods that were initially

selected for analysis was examined based on the design features mentioned above. Numerous site visits were made to each of the nine neighborhoods where both pictures and measurements were taken to examine and confirm the presence of these specific design features.

On January 4, 2010 an interview was conducted with former city of Arroyo Grande community development director Rob Strong to receive assistance in the process of narrowing the nine selected cases down to four. Rob Strong's served eight years as community development director and in that time he had become an expert on the neighborhoods built in Arroyo Grande in addition to the neighborhood dynamics of its residents. Strong proposed that all four of the selected cases be adjacent to both commercial and open space use in order to control for the effect they would have on residents' sense of community. With Strong's help four cases were selected, each neighborhood ranging in size of 97-128 residential units each.

3.3 Selected Cases

By comparing four physically distinct residential developments it will be easier to identify and compare variance in the sense of community variables chosen.

Between the four cases there were a total of 468 residential units being examined. The four case studies will hereby be referred to as Berry Gardens, The Village, Rancho Grande, and Oak Park Leisure Gardens.

Figure 1: Location of Selected Case Studies

3.3.1 Case Study 1

The first case study to be examined is the residential development known as Berry Gardens. Berry Gardens is located along the eastern edge of Arroyo Grande's city limits west of U.S. 101 and just south of East Grand Avenue, directly off of Oak Park Boulevard (Figure 2). The Berry Gardens development is the only case study out of the four being examined that has its own specific plan (Berry Gardens Specific Plan).

The City of Arroyo Grande has classified Berry Gardens' land use as Single Family Residential with Medium Density and zoned Single Family which allows for a maximum density of 4.5 dwelling units per acre. While there are more than 127 single family residential dwelling units located in the Berry Garden's development only 127 dwelling units are being examined for the purpose of this study. Constructed between the years 2001 and 2002, Berry Gardens' residential units are currently eight and nine years old. Berry Gardens is one of the two neighborhoods in this study that is classified as having neotraditional design elements.

The street network found in Berry Gardens is considered a modified grid network where streets run parallel to one another and connect to perpendicular streets yet are curvilinear in nature. Each of the streets in Berry Gardens contains a wide grass parkstrip, a consistent row of street trees, and five foot sidewalks (Figure2). Changes in street material are found at several locations to indicate the

possibility of a pedestrian crossing. Picket fences although not found amongst all homes in this neighborhood are however a common sight. The width of the street is 32 feet thus supporting on-street parking. Lot sizes typically range from 6,000 square feet to 8,987 square feet and homes have shallow setbacks. Structures located within the Berry Gardens development contain front garages but do not have their facades dominated by them as a majority of the homes have the garages turned at an angle. For homes that do not have an angled garage, the garage is set back from the house yet still visible from the street; this design feature allows for the home itself to remain the main focus. With garages at an angle or in the rear there is ample room for front porches. Berry Gardens contains a pocket park called “Kingo Park” in the heart of the development where residents can find a children’s playground structure, picnic tables, barbeques, and lots of grass.

Figure 2: Images of Berry Gardens

3.3.2 Case Study 2

The second case study to be examined is the residential development known as The Village. The Village is located adjacent to Arroyo Grande Creek and Highway 227 in the southeast portion of town just east of U.S. 101 (Figure 3). The Village is the site of the original town settlement dating back to the mid-to-late 1800s where many historic homes still stand. The city of Arroyo Grande has classified The Village's land use as Single Family Residential with Medium Density with several parcels designated as mixed use. Again Single Family Residential with medium density allows for 4.5 dwelling units per acre. The Village is zoned as Village Residential with a Historic Character Overlay Zone. The Historic Character Overlay Zone requires additional standards towards all renovation and new development within the zone. The intent of the zone aims to protect the historic buildings, character, architecture, and sites that reflect the heritage of Arroyo Grande (City of Arroyo Grande, 6). There are a total of 98 Single family residential units being examined in The Village for the purposes of this study. It is important to note that The Village does not have a clear and distinct boundary analogous to the other three case studies and for the purpose of this study a boundary was made based on the street layout.

The Village is the site of the original town settlement where the majority of its structures were built between 1885 and 1920; however, residential structures continue to be developed today. The residential structures vary in architectural style from bungalow, cottage, Craftsman, folk Victorian, Queen Anne, to Spanish

eclectic. While the architectural styles and materials differ greatly the homes share the common elements of height, mass, scale, and attention to ornamentation. Lots are small and narrow ranging from 4,290 square feet to 10,165 square feet. The design of facades dominates the structures and streetscapes as garages are not present in a majority of the homes. The Village is one of the two neighborhoods in this study that is classified as having neotraditional design elements. The street network found in The Village for the most part is a grid; all streets have a parkstrip of some kind; homes typically have a front porch and picket fences; there is a lack of garage dominated facades and there is ample on-street parking (Figure 3). While The Village embodies neotraditional design elements, it is important to note that it also has wide 42 foot streets and four foot sidewalks, which are uncommon design elements to be found in neotraditional developments. Located within close proximity to The Village is both the Village Green and Kiwanis Park which offer residents creekside recreation and picnicking opportunities.

Figure 3: Images of The Village

3.3.3 Case Study 3

The third case study to be examined is the residential development known as Rancho Grande. Rancho Grande is located just east of U.S. 101 in the northern portion of town adjacent to a regional commercial shopping center (Figure 4).

The Rancho Grande development is part of a larger master planned development known as Rancho Grande but for the purpose of this study will only address the development bounded by the streets Via Bandolero, Avenida De Diamante, and Via Vaquero. The City of Arroyo Grande has classified Rancho Grande's land use as Single Family Residential with Low- Medium Density which allows for a maximum of 2.5 dwelling units per acre. There are a total of 128 single family residential units in the portion of Rancho Grande being examined in this study.

The Rancho Grande development is similar to The Village in that its development was not constructed by a single developer; development was constructed on an individual unit basis. Presently there are eight vacant parcels. The majority of the residential units in this portion of Rancho Grande being studied began developing in the late 1980s and early 1990s making the majority of residential units roughly fifteen to twenty-two to years old with a fraction of the units being much younger. Rancho Grande is one of two neighborhoods in this study that has a home owners association. The home owners association for Rancho Grande is applicable to the entire Rancho Grande development including the 128 homes in this portion of Rancho Grande. Additional rules and standards are

applied to the structures within the jurisdiction of the Rancho Grande home owners association which can affect the urban design of the neighborhood.

Homes constructed in Rancho Grande vary greatly in terms of their height and mass. Such variation can be caused by the range in sizes and shapes of lots in addition to the terrain. The lot sizes in Rancho Grande are the largest of the four neighborhoods being studied: ranging from 15,000 square feet to 42, 688 square feet. Rancho Grande is the only neighborhood being studied that has a noticeable elevation change. Berry Gardens, The Village, and Oak Park Leisure Gardens are developed on flat land while Rancho Grande is built on a hill.

Because of the terrain, homes are not necessarily oriented towards the street nor can they been seen from the street; in some cases only the roof top is visible from the street. It is important to note that while not all homes are visible from or oriented towards the street, garages are still a dominant feature of the facades throughout the neighborhood. The street network in Rancho Grande is curvilinear in nature creating a loop around the neighborhood. The width of the street is 40 feet, allowing for on-street parking; however, based on numerous site visits no cars are found to park in the streets (Figure 4). Similar to the wide street, the Rancho Grande residential development has wide five feet sidewalks. None of the streets found in Rancho Grande have parkstrips or street trees. Located adjacent to the Rancho Grande Development is the Rancho Grande Park where residents can find two children's playground structures, horse shoe pits, basketball courts, and barbeques.

Figure 4: Images of Rancho Grande

3.3.4 Case Study 4

The fourth and final case study to be examined is the residential development known as Oak Park Leisure Gardens. Oak Park Leisure Gardens is located just east of U.S. 101 in the northern portion of town directly behind a regional commercial shopping center directly off of James Way (Figure 5). Oak Park Leisure Gardens is directly adjacent to the eastern edge of Arroyo Grande's city limits which it shares with the city of Pismo Beach and is surrounded by designated conservation open space. The city of Arroyo Grande has classified Oak Park Leisure Gardens' land use as Multi-Family Residential with high Density which allows for a maximum of nine dwelling units per acre. The Oak Park Leisure Gardens development is the only case study being examined that is classified as Multi-family and high density. There are a total of 115 multi-family residential units being examined in this study. The Oak Park Leisure Gardens development began construction in 1979 and finished in 1984 making the residential units between twenty-six and thirty-one years old.

Similar to Rancho Grande, Oak Park Leisure Gardens is zoned as a planned development and has a home owners association. Because Oak Park Leisure Gardens was constructed by a single developer, the residential units have architectural design unity. The lots range in size from 1,180 Square feet to 1,500 square feet making them the smallest of the four case studies. The residential units themselves are small; all units share common walls with their neighbor, a majority of residents have only a single car garage, and the house setback is

small (Figure 5). Because the lot size and setback is so small the front façade is dominated by the single car garage and driveway. The streets within the Oak Park Leisure Gardens are the narrowest of the four case studies with a width of 22 feet. The only sidewalks found in the development are not adjacent to the street but rather they create a path between two rows of units. No parkstrips or street trees are present in this development however landscaping is extensive along the path and in the shallow front yards of each residential unit. While none of the residential units have actual front porches, the two story homes have a front balcony which can be considered a front porch for the purpose of this study. One feature that is unique to this case study is the fact that Oak Park Leisure Gardens has a clubhouse for its residents to use, which could affect its residents' sense of community. Oak Park Leisure Gardens is located next to land designated "conservation open space" according to the City's land use map.

Figure 5: Images of Oak Park Leisure Gardens

3.4 Research Methods

Multiple research tools were utilized in this study as a way of examining the relationship between sense of community and the built environment. The primary research tool used in this study was a self-administered survey. The instrument's design was based on existing surveys associated with sense of community research and modified to meet the specific needs of this study. In addition to the instrument, numerous site visits were conducted to gather background data and collect measurements of the various urban design elements in each of the four case studies.

3.4.1 Survey

The design of the survey instrument was modeled after two existing surveys associated with sense of community research and influenced by McMillan and Chavis' 1986 article, "Sense of Community: A Definition and Theory." General format and organization of questions was modeled after the work of Thomas Glynn (1981). There were three sections of the survey: attitude and behavioral statements, open ended questions, and demographic questions. The first section of the survey would be a series of attitude and behavioral statements in which respondents would respond to statements on a five point Likert scale ranging from "strongly agree" to "strongly disagree" with a midpoint of neutral. The second section of the survey would be a series of open ended questions aimed at the respondent's community participation. The final section of the survey would ask several demographic questions in order to cross validate with the case

study respondents. All survey questions were formulated to measure the behavior, attitudes, and characteristics of each of the respondents.

Based on the work of Jack Nasar (1995) it was pivotal that length of the survey be limited to only essential questions as a way to ensure reliability in the results. Nasar (1995) believes, as the number of questions on a survey increases, its reliability decreases. Questions on the survey directly relate to the four sense of community indicators discussed by McMillan and Chavis (1986): membership, influence, integration and fulfillment of needs, and shared emotional connection. Measurement of these indicators was conducted by a series of questions representing each of the indicators in the survey. Respondents were not made aware of these said indicators as they answered each of the questions in order to protect the validity of the study.

Preparation of the survey began in early December 2009 and commenced in early February 2010. On February 13, 2010, 468 self-administered surveys were placed in the mail using the United States Postal Service. Addresses for each of the surveys were found through the real estate website zillow.com. Included with each of the surveys was a cover letter explaining that responses would be kept completely confidential and anonymous per the Human Subjects Committee Protocol at the California Polytechnic State University- San Luis Obispo (Appendix B). The cover letter also included the Arroyo Grande community development department's phone number if respondents were to suffer any

psychological risk that developed as a result of responding to this survey.

Respondents were informed of the opportunity to receive the result of the study when it was finished and that their participation was completely voluntary.

The survey instrument had a total of 27 questions in which 16 of the questions require a Likert scale response asking residents to indicate the degree to which they agree or disagree to each of the statement as they refer to their neighborhood (Appendix C). The instrument also includes five general demographic questions and six open ended questions that directly relate to the residents' behavior, participation, and attitude towards their neighborhood. The expected time to complete the self-administered survey was five minutes.

Each of the surveys included a stamped return addressed envelope to the City and Regional Planning Department at California Polytechnic State University - San Luis Obispo in order to encourage respondents to fill out the survey and mail it back. Surveys were completed and returned over a two month period during February and March 2010. A total of 131 surveys responses of the original 468 were returned between the four neighborhoods for an overall response rate of the 28 percent.

3.4.2 Site Visits and Physical Measurements

In addition to the 468 self-administered surveys, numerous site visits were conducted. In order to analyze the survey results the physical characteristic

variation must be assessed. Each case study was visited once during a weekday afternoon and again on a weekend morning. It is important to note that the case study observation was not aimed at neighborhood interaction but rather the physical characteristics of the neighborhood thus it is of no importance when each of the case studies was observed. The first visit to each of the case studies was conducted initially when there were nine potential case studies. The purpose of the first visit was to get a general understanding of the neighborhood, its layout, and design features. Pictures were taken to visually document each of the case studies and can be seen in their associated case study description.

Windshield surveys were also conducted on the first site visit documenting the presence or absence of street trees, parkstrips, porches, and front garages. The purpose of the second site visit was to collect the physical measurements of design elements such as the sidewalk, parkstrips, if any, and the width of the street in addition to familiarizing oneself with the neighborhood. This second site visit was conducted after the four final case studies had been selected. A tape measure was used to determine the width of the sidewalks and parkstrips. A tape measure was initially going to be used to measure the width of the street; however, the length of the tape measure was twenty-five feet. Because three of the four neighborhood streets were wider than twenty-five feet the tape measure needed to be moved thus increasing the level of error. In addition to the length of the tape measure, it became obvious that collecting these measurements on open streets was extremely dangerous and at times impossible. Street widths

were eventually measured using Google Earth as a way to insure safety. It is recognized however, that because street widths were collected using Google Earth that there is also a level of error.

The final resource used to collect measurement of physical design elements was the real estate website zillow.com. Zillow.com was previously used to obtain each of the addresses needed to mail out the surveys. Zillow.com contains basic information regarding a piece of property such as the year a home was built, the number of bedrooms it has, even the lot size. The website was used a second time to determine the lot size of each of the parcels within each case study. Lot size is the final physical design element being used to compare the relationship, if any, between residents' sense of community and the built environment.

3.5 Operationalization of Terms

Case studies are analyzed based on the responses received from the 27 questions asked in the survey and the measurements of the urban design elements in each of the neighborhoods. Each question in the survey was constructed to directly relate to the four sense of community indicators discussed by McMillan and Chavis (1986): membership, influence, integration and fulfillment of needs, and shared emotional connection. In addition to the questions measuring sense of community, they are designed to analyze the sense of community claims made by neotraditionalists while not specifically addressing them as neotraditional. Claims such as 1) design can affect a

residents desire to visit with one's neighbors, 2) be out and be social with one's neighbors, 3) feel accepted and safe within their neighborhood, and 4) do a favor for a neighbor are evaluated based on the responses received (Appleyard and Lintel, 1972; Brown and Cropper 2001). Supplementing the survey are the measurements and presence and/or absence of urban design elements found in each case study in order to analyze the relationship, if any between sense of community and the built environment.

The first 18 questions of the survey use attitude and behavioral statements to examine the residents' sense of community. The attitude and behavioral statements used disguise the sense of community indicators that measure residents' sense of community: membership, influence, integration/ fulfillment of needs, and shared emotional connection. Questions inquire about residents' tenure, their ability to make change in their neighborhood, their ease in which they can find a neighbor to socialize with, their overall satisfaction in living in the neighborhood, their degree of neighborhood participation, and residents' feeling of belonging. The second section of the survey contains 6 open-ended questions that inquire about residents' degree of participation within the neighborhood by asking questions about the amount of time spent in the neighborhood, and the number of neighbors known by first name and how often they converse with their neighbors. In addition to the degree of participation, residents are asked about the importance of the neighborhood to them and the reason they chose to live there. The third and final section of the survey asks basic demographic questions

such as sex, education level, and age. Age is asked for in general terms as it would relate to occupation such as: college student, worker, or retired. General age terms were used not only understand a respondent's general age cohort but to identify the amount of time a resident could perhaps spend within their neighborhood.

CHAPTER 4. FINDINGS FROM SURVEY & PHYSICAL INVENTORY

4.1 Overview

This chapter presents the results and analysis of the data gathered in the self administered survey. Additionally, this chapter provides a comparison between the four case study neighborhoods while contrasting the sense of community outcomes between the case studies' built environments. The results show a lack of relationship between the spatial properties found in each case study and the sense of community indicators reported by their residents, based on the four sense of community indicators; there are however, several non-spatial or social variables that indicate a positive relationship. In case studies with similar physical properties different sense of community indicators were found. In case studies with noticeably different physical properties similar sense of community indicators were found. Among the case studies with new urbanist design elements the sense of community indicators, "integration and fulfillment of needs" and "shared emotional connection" exhibited the greatest differences. The results show similar responses when analyzing the sense of community indicator "influence" among three of the four case studies. Finally, the indicator "membership" showed a slight difference in results across all four case studies.

Table 1: Visual Comparison of Cases

Physical design elements	Street network	Street Width	On-street parking	Sidewalk width	Parkstrip	Street trees	Garages	Front porches	Lot size/ shape	Set backs	Open Space	Density
Case Study 1 Berry Gardens												4.5 du/acre
Case Study 2 The Village												4.5 du/acre
Case Study 3 Rancho Grande												2.5 du/acre
Case Study 4 Oak Park Leisure Gardens												9 du/acre

Table 2: Visual Comparison of Findings

Sense of community indicators	Membership	Integration and fulfillment of needs	Influence	Shared Emotional Connection
Case Study 1 Berry Gardens
Case Study 2 The Village
Case Study 3 Rancho Grande
Case Study 4 Oak Park Leisure Gardens

4.2 Case Study Analysis

Case studies were analyzed on the basis of their physical properties and demographics and social variables. In addition four sense of community indicators (membership, integration and fulfillment of needs, influence, and shared emotional connection) were examined in each case. Each case study was initially individually analyzed and then in comparison to each other (Table 1 and Table 2). Illustrated in Appendix D are the results of all questions asked in the self-administered survey.

4.2.1 Case Study 1

Berry Gardens, case study 1, had the lowest overall response rate at 21 percent. Unique to this particular case study, more men responded than women with 59 percent male and 37 percent female. Of the respondents in case study 1, only 48 percent agreed that they frequently talk to their neighbors and 34 percent felt that they could find someone to talk to if they were in the mood to talk. Survey respondents in Berry Gardens felt that there would be no one to turn to if they were upset about something and neutral to the belief that if there was a serious community problem the residents would be able to come together and try to solve it. Most respondents, 56 percent, agreed or strongly agreed with the statement “people can depend on each other in this community;” however, case study 1 had the greatest percentage of the four case studies at 33 percent who were neutral to the belief that they could depend on one another. When asked, 70 percent of residents positively agreed that they get a lot out of living in their

neighborhood while at the same time 89 percent of the residents claimed to like living in their neighborhood. Residents may be generally satisfied in living in Berry Gardens; however only 26 percent of residents surveyed claimed to be active and involved in the neighborhood. With only 26 percent of residents admitting to be active and involved, case study 1 had the least active and involved residents of the four cases studies examined. Two thirds of the respondents in case study 1 were middle-age or for the purpose of this study “worker”. Approximately 11 percent of respondents agree that this is not a good neighborhood to raise children in nor were they confident in letting their children play outside. Case study 1 believed that their neighbors were similar to themselves and that they felt as if they belonged in this particular neighborhood. This suggests residents feel that they lived in a fairly homogeneous neighborhood.

The Berry Gardens residential development was constructed in 2001 and 2002 thus residents’ housing tenure is less than the other developments. The majority of resident’s, 51 percent, admitted to living there between 6 and 15 years suggesting that they are the first and only owners of their home. When compared to the other case studies, Berry Gardens had the overall highest educational attainment with 74 percent having received a bachelor’s or professional degree.

4.2.2 Case Study 2

Case study 2, The Village, had an overall response rate of 29 percent. Survey respondents from case study 2 had the greatest disproportion of respondents between men and women with 75 percent of respondents being female and 21 percent being male, in addition to the greatest percentage of women to respond among all four cases. Most respondents, 68 in all, claimed to be active and involved in their neighborhood. In fact, case study 2 residents were 28 percent more active and involved than the next closest case study. Resident agreed that they can find someone to talk to easily and admit that they frequently communicate with their neighbors. A 79 percent of the residents felt that they can depend on one another and 68 percent believe there would be someone to turn to if they were upset about something.

Overall, respondents from case study 2 had the greatest percentage of working adults at 79 percent while at the same time having the least greatest percentage of retired adults at 18 percent. The age results for case study 2 were by far the most disproportional of the four case studies. A 96 percent of case study 2 respondents considered The Village a good place to raise children while only 65 percent of respondents felt confident in letting them play outside.

Most respondents, 85 percent, claimed that they feel as though they belong in The Village. Additionally, residents felt that the people they were most similar to

lived in The Village as well, suggesting that residents identify with living in a homogeneous neighborhood.

Unlike case study 1 where homes were built in the last decade, the residential units found in case study 2 began to be constructed in the late 1800s and have continued over the last one hundred and twenty years. Case study 2 respondents in the majority of cases are not the original owner of the home. The majority of residents, 72 percent, have lived in The Village for a period of time greater than 6 years. The housing tenure in case study 2 is the second highest of all four case studies being examined. In addition to having longer housing tenure, 71 percent of residents in case study 2 expected to live in The Village for a period of time greater than 6 years.

Overall, case study 2 had the lowest educational attainment by having an equal distribution of respondents graduating from high school, attending college but not graduating, and attaining an associate degree with 11 percent in each category, in addition to having the lowest combined percentage of bachelor's and professional degree at 65%. Overall, 100 percent of the residents claimed to like living in The Village and 96 percent of them believe that they get a lot out of living in The Village. When analyzing the different sense of community variables, this case study had the highest levels of sense of community and some of the most new urbanist design elements in comparison to the other case studies.

4.2.3 Case Study 3

Case study 3, Rancho Grande had the overall highest response rate at 35 percent. Rancho Grande was the only case in which respondents were almost evenly divided between men and women with a 47 percent male, 51 percent female response rate. The majority of residents, 85 percent, got a lot out of living in Rancho Grande and 89 percent claimed they liked living there. Residents believe there are people around to chat with and 63 percent admit that they frequently converse with their neighbors. When asked, 71 percent of residents felt that they could rely and depend on their neighbors, in addition to believing they could change something in their neighborhood.

Case study 3 had age results in the categories of “worker” and “retired” similar to case study 4; however case study 3 had more middle-aged adults. In case study 3, Rancho Grande, there was a total of 56 percent of residents claiming to be “worker” or middle-aged adult and 40 percent claiming to be “retired.” The majority, 86 percent, of the residents in case study 3 felt that Rancho Grande is a good place to raise their children and 73 percent of them felt confident in letting their children play outside. Most respondents, 80 percent, felt that they belonged in Rancho Grande. Additionally, 60 percent of residents claimed that their neighbors were similar to themselves.

Similar to case study 2, case study 3 continues to be developed and many of the current homeowners are not the original homeowners. The residents’ in case

study 3 had the overall longest housing tenure with 73 percent of its residents living there for a period of time greater than 6 years. In addition to residents having longer housing tenure compared to the other case studies, none of the residents in case study 3 indicate moving within the next year and only 11 percent claim they will move within the next 5 years. Overall, residents of case study 3 are the second most educated residents of the four case studies being examined. Although case study 3 does not feature many of the new urbanist elements, residents believe there to be a strong sense of community within their neighborhood.

4.2.4 Case Study 4

Case study 4, Oak Park Leisure Gardens, had an overall response rate of 27 percent in which 58 percent were female and 35 percent were male. About 51 percent of respondents agree that it is easy for them to find a neighbor to talk to if they wanted to talk. While residents admitted to the ease in which they can find a neighbor to talk to, they also admitted that they do not talk with their neighbors as frequently as the other case studies do. The survey respondents claimed to talk to their neighbors between two and five times a week.

Case study 4 had similar age results in the categories of “worker” and “retired” as case study 3 however Case study 4 did report having more retired persons. Residents of Oak Park Leisure Gardens have 52 percent “workers” and 42 percent “retired.” The age of residents in case study 4 is almost evenly divided

between “worker” and “retired” which is not found in case study 1 or case study 2. This particular case study has the highest percentage of retired persons. Roughly 65 percent of Oak Park Leisure Gardens’ residents admitted that case study 4 is not a good place to raise children and only 42 percent of respondents felt confident in letting their children play outside. It is important to note that several survey respondents mentioned the homeowners association discouraging children from playing outside and that may contribute to the lack of confidence parents may have in letting their children play outside. This is not a safety concern but it comes from the Home Owners Association requirements. The narrow, 22 feet wide streets, lack of open space within the development and shallow lots may also be contributing factors to why residents feel this is not a good place to raise children.

When respondents were asked about belonging, 13 percent of case study 4 residents responded negatively, the most out of all four cases. Additionally 23 percent of the residents felt that their neighbors were different than them.

Oak Park Leisure Gardens was the only multifamily development being analyzed in this case study comparison. Additionally, Oak Park Leisure Gardens was the only case in which renters responded. Of the responses received, 40 percent claimed to be renters. Case study 4 had the greatest percentage of respondents move in within the last five years at 41 percent, thus having the least amount of housing tenure. The lack of housing tenure and percentage of renters could have

contributed to the low frequency of neighborhood interaction or why residents had the third lowest overall satisfaction in living there. Additionally, 32 percent of respondents plan on moving out of Oak Park Leisure Gardens within the next five years giving case study 4 the lowest expected housing tenure.

While the residents of case study 4 have lower expected housing tenure when compared to the other case studies and admit to being neutral when it comes to involvement, they have are confident in their ability to solve a community problem. Overall, 74 percent believe if there was a serious community problem that they would be able to solve it in addition to 55 percent feeling that they could change something in the neighborhood if they really tried. While 48 percent of case study 4 residents have received a bachelor's or professional degree they still have the third lowest educational attainment when compared to all other case studies.

4.3 Cross Comparison of Cases

Cross comparison of the four case studies yielded two key findings. The first interesting finding was that case study 1 (Berry Gardens) and case study 2 (The Village) had similar spatial properties to one another yet different sense of community measurements. The second finding was that case study 3 (Rancho Grande) and case study 4 (Oak Park Leisure Gardens) had similar sense of community measurements yet different spatial properties. Based on these two findings this study found social variables to have contributed more to residents'

sense of community than the spatial or physical variables that make up each case study. The following sections provide an in-depth description of the findings for the four sense of community indicators of each case study.

4.3.1 Membership

The sense of community indicator membership has five attributes that contribute to a person's sense of membership: boundaries, emotional safety, a sense of belonging and identification, personal investment, and a common symbol system (McMillan and Chavis, 1986). The self-administered survey asked residents a number of questions referring to membership such as: feeling as though they belong, whether they are active and involved, and length of residency.

Case study 1 and case study 2 had similar spatial features, which are commonly adopted by new urbanist designs; however, the sense of membership felt by the residents of the two case studies was considerably different. When measured, case study 1 (Berry Gardens) had a membership score of 58 percent while case study 2 (The Village) had a membership score of 71 percent. One explanation for this difference is the social variable gender. Gender, as stated in chapter 2 is said to be a social variable affecting residents' sense of community as females have larger neighborhood networks than males and more intense multiplex relations within their neighborhoods (Campbell and Lee, 1992; Willmott, 1987; Fischer 1982). Case study 1 was the only case in which more males responded than females with 59 percent males and 37 percent females responding. In case

study 2 the opposite was true, where 75 percent of respondents were women. If women do in fact have larger and stronger neighborhood networks, it could account for The Village's higher membership score.

Respondents from both case studies agreed or strongly agreed that they felt they belonged in their respected neighborhoods. Additionally, respondents from both case studies felt that the people most similar to them lived in the same community. These findings suggest residents in both case studies identify with living in homogeneous neighborhoods. Carmon (1976) found that "the more homogenous the group of residents, the higher the potential of neighbourliness." This finding by Carmon (1976) suggests that the social variable of homogeneity could be the contributing factor affecting sense of community among case study 1 and case study 2. However, Carmon (1976) also finds that "the higher the homogeneity, the more impact the physical setting of the housing units have on the social relationships between residents." It is difficult to assess whether the spatial properties actually contributed to the 13 percent difference in the membership indicator as case study 1 and case study 2 shared similar new urbanist spatial properties such as small to medium setbacks, absence of garage dominant facades, parkstrips, front porches, grid and modified grid street networks and a density of 4.5 dwelling units per acre.

While two case studies may have shared similar spatial properties and respondents lived with people similar to themselves, their activity and

involvement levels varied. McMillan and Chavis (1986) identify personal investment as a key contributor to one feeling as though they are part of a group. By investing part of one's self a member has earned a place in the group and as a result that membership will be more meaningful and satisfying. In case study 1, residents were the least active and involved with only 26 percent agreeing, while residents in case study 2 were the most active and involved with 68 percent agreeing. This finding by McMillan and Chavis (1986) perhaps explains why case study 2 had a higher measurement for the membership indicator than case study 1.

Housing tenure and one's expected housing tenure has also been found to be related with residents' investment and attachment to a neighborhood thus effecting a resident's degree of membership (Kasarda and Janowitz, 1974; Glynn, 1981; and Buckner, 1988). The residential units in case study 1 were built within the last decade and as a result the majority of its residents, 93 percent have lived there less than 15 years but the 36 percent of the residents in case study 2 have lived there more than 16 years, possibly explaining why the residents of case study 2 are more active and involved and claim a higher sense of membership. Furthermore, the expected housing tenure is much greater in case study 2 than in case study 1. Of the survey respondents from case study 2, 71 percent of them expect to live in The Village for a period of time greater than 16 years while only 33 percent of Berry Gardens' residents expect to live there for the same period of time. The difference in the expected housing tenure of

residents in case study 1 and case study 2 is perhaps the reason residents of case study 2 are more active and satisfied members of their neighborhood.

Case study 3 and case study 4 had similar results when it came to membership however considerably different spatial features. When measured, case study 3 (Rancho Grande) had a membership score of 60 percent while case study 4 (Oak Park Leisure Gardens) had a membership score of 58 percent. The social variable gender, in this particular comparison, does not appear to contribute to the difference in the case studies' membership measurements. Case study 3 had an almost evenly divided response rate between men and women while case study 4 had 23 percent more women respond than men.

Respondents in both case studies agreed or strongly agreed that they felt they belonged in their respected neighborhoods with 80 percent of case study 3 residents agreeing and 81 percent agreeing in case study 4. Additionally, 60 percent of case study 3 and 58 percent of case study 4 residents felt that the people most similar to them lived in the same community. These findings suggest residents in both case studies identify with living in a relatively homogeneous neighborhood. The new urbanist claim that physical design elements foster greater sense of community conflict with Carmon's finding that "the higher the homogeneity, the more impact the physical setting of the housing units have on the social relationships between residents" (1974). For example, case study 3 has a residential density of 2.5 dwelling units per acre, homes are located on

large lots with an average setback of 70 feet or greater, and few homes have front porches. In case study 4, the residential density is 9 dwelling units per acre, the homes are attached multifamily located on small lots with setbacks ranging from 19 to 50 feet. If the two case studies are roughly proportional in homogeneity, the spatial properties that define each case study would have a greater contribution to residents' sense of membership and overall sense of community; however, that is not demonstrated in the data collected.

The most significant difference between case study 3 and case study 4 besides the built environments is the housing tenure and the expected housing tenure of the survey respondents. Kasarda and Janowitz (1974) Glynn (1981) and Buckner (1988) have all found a positive relationship between residents' investment and attachment to a neighborhood and the length of time one lives and expects to live in a neighborhood. Overall, 73 percent of case study 3 residents have lived in Rancho Grande for a period of time greater than 6 years while 58 percent of case study 4 have lived in Oak Park Leisure greater than 6 years. While case study 3 residents have the longest housing tenure, case study 4 residents have the greatest percentage of residents move in within the last five years at 41 percent. One explanation for this may be because 40 percent of the residents are renters thus there is a higher turnover rate. Homeownership is another factor that can contribute to various degrees of resident membership, however in this particular comparison renters in case study 4 did not appear to have any less membership than owners in case study 3. Homeowners tend to have greater neighborhood

attachment than renters because they have invested more which can affect residents' degree of membership and sense of community (Davidson and Cotter, 1986; McMillan and Chavis, 1986).

As stated previously, McMillan and Chavis (1986) have identified personal investment as a key contributor to residents' sense of membership. Knowing that homeowners tend to have greater attachment to their neighborhood because of they have invested more of themselves into it, it is surprising to find the degree to which residents are active and involve in both case study 3 and case study 4 are similar. This finding is even more surprising knowing that 51 percent of case study 3 residents expect to live in Rancho Grande for a period of time greater than 16 years and only 38 percent of case study 4 residents expect to live in Oak Park Leisure Gardens for the same period of time. Glynn (1981) found a positive relationship between expected housing tenure and personal investment as residents tend to invest and be attached more to neighborhoods they expect to reside in for longer periods of time.

In the comparison of case study 3 and case study 4 spatial properties did not contribute to a difference in sense of membership as the spatial properties differed greatly and the membership indicator measurements were only 2 percent different. While the spatial properties did not contribute to a difference in sense of membership it is important to note that the social or non spatial properties did not contribute to a difference either. While there were more women responses and

less housing and expected housing tenure found in case study 4, residents in both cases felt they belonged, lived near people similar to themselves, and were active roughly at the same level, thus having similar membership measurements.

4.3.2 Integration and Fulfillment of Needs

The sense of community indicator integration and fulfillment of needs identifies “reinforcement” as the needs of residents being met through the resources and rewards provided in a community (McMillan and Chavis, 1986). Integration and fulfillment of needs measures resident’s overall satisfaction within their community as it considers the status of resident’s membership, the individual needs and values of residents, and the overall success and values shared within a community. The survey questions measuring integration and fulfillment of needs asked residents whether they felt they could depend on their neighbors, whether they could talk to them if they were upset about something, whether they got something out of living in their neighborhood, and if they were generally satisfied in living there. The measurement of integration and fulfillment of needs had noticeable results among all case studies.

Case study 1 and case study 2 had similar spatial features; however, considerably different measurements of the indicator integration and fulfillment of needs. When measured, case study 1 (Berry Gardens) had a score of 59 percent while case study 2 (The Village) had a score of 81 percent. In addition to gender, one explanation for such a finding is the social variable age. Campbell

and Lee (1992) hypothesize that middle-aged adults, “worker” for the purpose of this study, have larger, more intense and more multiplex networks than both their younger and older neighbors. In both case studies the majority of survey respondents are middle-aged adults; however, case study 2 residents reported 16% more middle-age adults than case study 1. Middle-aged adults are typically married and have children which Campbell and Lee (1992) also believe leads to greater levels of neighborhood attachment which can explain why residents in case study 2 are the most active and social in comparison to the other case studies. When questioned, 100 percent of case study 2 respondents claimed to like living in their neighborhoods of which 79 percent strongly agreed. In comparison to the other case studies, The Village residents feel they can depend on one another more so than any other case with 79 percent agreeing they can depend on their neighbors. While 89 percent of case study 1 residents claimed to like living in their neighborhood 4 percent strongly agreed they do not like living in their neighborhood. The social variable age does not appear to have as strong of a relationship with sense of community in this particular case as residents tend to be the least active and least social. When comparing the degree of dependence among Berry Gardens’ residents, they come in last with only 63 percent of residents agreeing that they can depend on their neighbors. Educational attainment may account for the lack of involvement in residents as there is a negative relationship between educational attainment and sense of community (Buckner 1988).

With the majority of residents in both case studies being working adults, opinions of child safety and satisfaction was of concern in the measurement of integration and fulfillment of needs. When asked, 96 percent of case study 2 residents felt The Village was a good place to raise children even though traffic volumes are slightly higher than other case studies and the only open space is the Heritage Square Park which is found outside the case study boundary lines. Although the streets of case study 1 have lower volumes of traffic and Kingo Park is located in the center of the development only 74 percent of Berry Gardens residents felt is a good place to raise children. It is not clear whether spatial properties or social variables account for the 22 percent difference between case study 1 and case study 2 residents in regards to child upbringing.

Overall case study 1 residents were the least satisfied residents examined in this study while case study 2 residents were the most satisfied. This finding clearly shows that while spatial properties in two neighborhoods can be similar, sense of community can vary. Survey results show a positive relationship between the frequency and quality of neighborhood interaction and the measurement of integration and fulfillment of needs across all cases.

Case study 3 and case study 4 had relatively similar measurements of the sense of community indicator integration and fulfillment of needs yet completely different spatial features. When measured, case study 3 (Rancho Grande) had a score of 72 percent while case study 4 (Oak Park Leisure Gardens) had a score

of 65 percent.. As stated before frequency and quality of neighborhood interaction positively relates to higher integration and fulfillment of needs measurements; this finding along with the social variable age can perhaps explain why case study 3 had a slightly higher integration and fulfillment of needs measurements.

It appears that the social variable age may play a contributing factor in the similar measurements of the sense of community indicator integration and fulfillment of needs. The age of residents in case study 3 and case study 4 were roughly proportional to one another in the categories of “worker” and “retired.” While 56 percent of case study 3 residents are middle-aged adults, 52 percent of case study 4 residents admit to being the same. In case study 3, 40 percent of residents claim to be “retired” and 42 percent are “retired” in case study 4. Again, middle-aged adults typically are married and have children which is associated with greater neighborhood attachment (Durkheim, 1966; Danigelis and Pope, 1979; Greer, 1972; Liebow, 1967). Residents increase their investment and participation in their neighborhood and larger community when they have a family. This finding supports Rancho Grande’s residents claim that they are active and involved in their neighborhood and perhaps why they are so satisfied in living there. 86 percent of the residents in case study 3 felt that Rancho Grande is a good place to raise their children and 73 percent of them felt confident in letting their children play outside. Wide streets, large lot sizes, and Rancho Grande park located adjacent to the Rancho Grande development

perhaps contribute to the level of comfort residents feel towards their children playing outside.

The impact middle-aged adults are said to have on size and intensity of neighborhood networks is not found in case study 4. Oak Park Leisure Gardens residents tend to talk less frequently to their neighbors, be less active and involved, and are generally less satisfied with their neighborhood than case study 3 residents although the difference is minimal. When comparing whether residents got something out of living in their respected neighborhoods 80 percent of residents in case study 4 agreed while 85 percent agreed in Rancho Grande. If the spatial properties did in fact contribute to a greater sense of community the data collected between case study 3 and case study 4 would illustrate this relationship but it does not.

4.3.3 Influence

The sense of community indicator influence is bidirectional in that it considers the influence a resident has on a group or community in addition to the influence a group or community has on the resident (McMillan and Chavis, 1986). Residents are attracted to communities where they feel they can be influential and it has been found that the most influential people tend to recognize the needs and opinions of others. McMillan and Chavis (1986) find that a group's cohesiveness is contingent upon their ability to influence one another. The survey asked residents if they felt they could change something in the neighborhood if they

tried, whether they would consider their neighbor's opinion if they were painting their fence, and if they felt they could solve a serious community problem. The measurement of influence had similar results among all case studies with the exception of case study 1.

Three of the four case studies being compared had similar findings when it came to the indicator influence. Case study 2 and case study 4 both had a score of 69 percent for influence and case study 3 had a score of 68 percent. It is the score of case study 1 that is considerably different than the others, scoring only at 51 percent. It is important to recall that the residential units found in case study 2 (The Village) have a historic overlay zone on top of its base zone, Village Residential. The historic overlay zone is designed to protect the character, architecture, and heritage of buildings located within the Village thus additional restriction are imposed on the residential units. In addition, both case study 3 and case study 4 have homeowners associations that residents belong to. Homeowners associations have the power to provide services, regulate activities, impose fines, and sue for non-compliance. It is perhaps these additional regulations and associations that can explain why the three case studies have similar measurements for the indicator influence and why case study 1 does not.

McMillan and Chavis (1986) mention conformity as a contributor to influence. Conformity of members creates a strengthening bond and creates greater social cohesion among members. Because the three case studies are forced to

conform perhaps they have greater social cohesion and influence than the residents of case study 1 where there is no need or reason to conform and homes are subject to individual freedom. Conformity and influence were analyzed when residents were asked if they would consider their neighbor's opinion before painting their fence. Case study 1 had the lowest overall percentage of residents admit that they would consider their neighbor's opinion at 52 percent while case study 3 (Rancho Grande) had the highest overall percentage at 89 percent, perhaps because of the homeowners association.

Furthermore, residents were questioned on how confident they were in solving community problems and making a change in the neighborhood as a way of measuring residents' perceived influence. Similar to the other findings found thus far, the results of case study 1 are distinct from the other three case studies. Only 37 percent of residents from case study 1 believe they could make a change in their neighborhood if they really tried while case study 4 was the next closest with 55 percent of respondents agreeing that change could be made in their neighborhood if they really tried. Case study 3 (Rancho Grande) was the most confident of the four cases in believing that change could be made in their neighborhood perhaps this is because of the homeowners association or because 73 percent of the residents had have lived in the neighborhood for a period of time longer than 6 years and had the longest housing tenure (Buckner 1988). When asked how confident they were in neighbors coming together to solve a problem case study 1 had the least confidence with only 63 percent

believing their neighborhood could which is 11 percent less than the next closest case. One justification for this finding is case study 1 residents are the least active and involved group of residents being examined in this case study comparison in addition to interacting with their neighbors the least. Spatial properties do not appear to relate to higher influence measurements as case study 2, case study 3, and case study 4 are unique in their physical characteristics but identical in their indicator measurements thus social variables and possibly the presence of overlay zoning and homeowners associations are a contributing factor to residents' perceived influence.

4.3.4 Shared Emotional Connection

The sense of community indicator shared emotional connection evaluates residents' interaction in terms of both frequency and quality. In addition to frequency and quality of social interaction, shared emotional connection considers the bonds, and history shared by residents or the ability to identify with them (McMillan and Chavis, 1986). In order to understand residents' shared emotional connection the survey asks residents how many neighbors they knew by name, how frequently they talk to neighbors, and what they would do for their neighbor, such as call their neighbor at work if they noticed someone breaking into their home. The measurement of shared emotional connections had the greatest range of results of the four indicators being measured.

Case study 1 and case study 2 had similar spatial properties yet drastically different shared emotional connection measurements. When scored, case study 1 (Berry Gardens) had a shared emotional connection of 48 percent while case study 2 (The Village) had a shared emotional connection score of 75 percent. One explanation for such disparity is the social variable educational attainment. Buckner (1988) found a negative relationship between educational attainment and residents' overall sense of community. Case study 1 had the overall highest educational attainment of the four case studies. This finding could perhaps explain why residents of case study 1 were the least active and involved residents in addition to interacting with their neighbors the least. Whether educational attainment played a role in residents' social interaction or not, it is clear that the spatial properties claimed to foster greater social interaction and greater sense of community did not support such claim in case study 1. Even with the presence of rear and side loaded garages, a modified grid street network, 25 to 55 feet setbacks, 5 feet wide sidewalks, 6 feet wide parkstrips, 70 to 80 percent of the homes having front porches, and consistent street trees, residents still admitted to interacting with their neighbors less than other neighborhoods being examined. Educational attainment could perhaps explain why even with the presence of the spatial properties that create interactive spaces residents still chose not to interact with their neighbors.

Case study 2 on the other hand had the lowest overall educational attainment which could explain why case study 2 residents talk more frequently to their

neighbors, are more active and involved, and perhaps why they feel that they can depend on one another more than the other case studies. Again it is difficult to assess whether the social variable educational attainment or the spatial properties contributed to such a high measurement of shared emotional connection but since case study 2 also has rear and side garages, a grid street network, 20 to 30 feet setbacks, 4 feet wide sidewalks, 4 feet wide parkstrips, and 60 to 70 percent of homes having front porches in addition to having the same residential density of 4.5 dwelling units per acre as case study 1, having received the least education is one way to justify a higher shared emotional connection measurement. Seeing as the spatial properties were similar and the shared emotional connection measurement was different, the educational attainment variable is a good indicator to use in measuring residents' sense of community.

In addition to the frequency of residents' interaction, the quality and bonds formed in the interaction are also important in shaping a residents' shared emotional connection. In order to measure the quality of a residents' shared emotional connection the survey asked several questions, one of which is the number of neighbors the resident knew by first name. The findings of this question may help explain why residents of case study 2 had a greater shared emotional connection than case study 1. The majority of residents in case study 1 admitted to only knowing between 2 and 5 people on a first name basis while residents in case study 2 admitted to knowing between 6 and 10 people. The

number of first names known can be related to the frequency in which residents talk to their neighbors and as Village residents talk more frequently to their neighbors they know more of them on a first name basis.

Other questions aimed at analyzing the quality of residents' shared emotional connection inquired what one neighbor would do for another neighbor. For example, the survey asked residents if they would call their neighbor at work if they saw someone breaking into their home. In response to this question, case study 1 and case study 2 responded about the same with 71 percent of residents in case study 1 admitting they would and 79 percent in case study 2. While the two case studies appear to have similar results when willing to call each other in the event of a robbery, the same cannot be said when evaluating how much they depend on one another. The majority of respondents in both cases agree they can depend on their neighbors however 79 percent of the case study 2 residents positively agreed while only 63 of case study 1 residents did - indicating The Village residents have greater confidence in their neighbors when it comes to depending on them.

Case study 3 and case study 4 had similar shared emotional connection scores but different spatial properties. Case study 3 scored a 61 percent for the shared emotional connection indicator and case study 4 scored a 58 percent. If spatial properties do in fact contribute to an overall sense of community a difference in spatial properties would result in a difference in sense of community which is not

found in the comparison of case study 3 and case study 4. Thus social variables must be contributing to residents' shared emotional connection.

As stated before, educational attainment has a negative relationship with sense of community, therefore the higher the education a resident has the lower the sense of community (Buckner 1988). The majority of case study 3 residents, 71 percent, had attained a bachelor's or a profession degree suggesting that involvement and social interactions would be less than case study 2, which is true. While residents of Rancho Grande had a lower percentages compared to case study 2 (The Village) when it came to how active and involved they were and how frequently they talk to their neighbors they still had the second highest percentages in those questions. Additionally, Rancho Grande residents admitted to knowing at least 16 or more neighbors by first name, when compared to other case studies residents of case study 3 know more neighbors than any of the others. In this particular case study, the findings suggest the educational attainment variable does not negatively contribute to residents' shared emotional connection.

The spatial properties found in case study 3 would not contribute to the ease and frequency of social interaction between neighbors if new urbanist claims were true. The residential units are on large lots with an average setback greater than 70 feet. Additionally, there is a density of 2.5 units per acre, units and lots are shaped by the terrain they are located on and are not necessarily oriented toward

the street. While the sidewalks are a wide 5 feet they are not complemented with the presence of a parkstrip or tree streets. Porches can be found in case study 3; however they serve primarily an architectural purpose more so than a social one. Although the spatial elements claimed to foster greater sense of community are not present, 63 percent of residents still feel they talk to their neighbors frequently between 2 and 5 times a week.

Similar findings were found in case study 4 where 67 percent of the residents had attained a bachelor's degree or higher. Overall, 55 percent of residents agreed to talking with their neighbors frequently on average between 2 and 5 times a week in addition to the 51 percent who agreed that it is easy to find someone to talk to if they were in the mood to talk. This finding could perhaps be explained with the spatial properties close proximity. The residential units have a density of 9 units per acre and are on small lots with shallow setbacks ranging from 19 to 50 feet. Gans' (1967) study found friendship formations were determined by the proximity of homes. The spatial properties above may contribute to the ease in which neighbors interact with each other however residents did admit to talking with their neighbors less frequently than case study 2 and case study 4 and perhaps the lack of sidewalks, garage dominant facades, and second story balconies instead of front porches can explain why neighbors do not interact as frequently as residents of case study 2 and case study 3.

When residents were questioned on the quality of their neighborhood interactions, residents in both case studies responded similarly. Of the respondents from case study 3, 71 percent felt they can rely and depend on their neighbors if they needed to while roughly 68 percent of residents in case study 4 felt the same. Additionally, when asked if they would call their neighbor at work if they knew someone had broken into their neighbor's home, 82 percent of case study 3 residents admitted they would and 84 percent of case study 4 residents, the greatest of all four case studies, claimed they would also.

It is unclear whether the spatial properties found in case study 4 contributed to a residents' shared emotional connection; however, the spatial properties found in case study 3 would not support frequent neighborhood interaction. Because the spatial properties of the two case studies are dramatically different and the shared emotional connection measurements are within 3 percentages of one another, the spatial properties do not appear to play a factor in residents' shared emotional connection.

Table: 3 Findings and Explanations

Key Findings	Case Studies	Findings & Explanations	Survey Outcomes	Supporting Literature
Finding #1: Neighborhoods with similar physical properties had different sense of community scores	The Village	Gender	The Village: 75% of responses were female	Fischer (1982) Willmott (1987) Campbell & Lee (1992)
			Berry Gardens: 59% of responses were male	
		Personal Investment	The Village: 68% strongly agree & agree to being active & involved	McMillan & Chavis (1986)
			Berry Gardens: 26% strongly agree & agree to being active & involved	
		Housing Tenure	The Village: 36% of residents have lived there greater than 16 years	Kasarda & Janowitz (1974) Glynn (1986) Buckner (1988)
			Berry Gardens: limited to 8-9 years; 93% of residents have lived there less than 15 years	
	Berry Gardens	Expected Housing Tenure	The Village: 71% of residents expect to live there for a period of time greater than 16 years	Kasarda & Janowitz (1974) Glynn (1986) Buckner (1988)
			Berry Gardens: 74% of residents have received a Bachelor's degree or higher	
		Education	The Village: 65% of residents have received a Bachelor's degree or higher	Buckner (1988)
			Berry Gardens: 74% of residents have received a Bachelor's degree or higher	
		Frequency & Quality of Social Interaction	The Village: residents interacted with their neighbors the most frequent	McMillan & Chavis (1986)
			Berry Gardens: residents interacted with their neighbors the least frequent	
Finding #2: Neighborhoods with similar sense of community scores had different physical properties	Rancho Grande	Homogeneity	Rancho Grande: 60% of residents felt they were similar to their neighbors	Carmon (1974) Unger & Wandersman (1985) McMillan & Chavis (1986)
			Oak Park Leisure Gardens: 58% of residents felt they were similar to their neighbors	
		Age	Rancho Grande: 56% of residents were workers & 40% of residents were retired	Campbell & Lee (1992)
			Oak Park Leisure Gardens: 52% of residents were workers & 42% of residents were retired	
	Oak Park Leisure Gardens	Personal Investment	Rancho Grande: 40% of residents strongly agree & agree to being active & involved	McMillan & Chavis (1986)
			Oak Park Leisure Gardens: 36% of residents strongly agree & agree to being active & involved	
		Homeowners Association	Rancho Grande: Yes	
			Oak Park Leisure Gardens: Yes	

CHAPTER 5. CONCLUSION

5.1 Overview

This chapter compares the findings of this study with findings from previous studies that have analyzed the relationship between the built environment and the sense of community. Additionally, this chapter will provide possible direction for further research on the topic.

5.2 Research Comparison

The findings of this study indicate that while the physical properties claimed to foster sense of community may be present in various developments, a similar degree of residents' sense of community may not be. Additionally, the degree of residents' sense of community can be similar in various developments which have quite distinct and different physical characteristics. When comparing this study to studies conducted previously by others there are both similar and conflicting findings.

Brown and Cropper (2001) studied to what extent the designs of New Urbanist developments are related to the behavioral and social goals they are intended to support. In order to examine this relationship residents of both a New Urbanist and a standard suburban subdivision were interviewed. Brown and Cropper's (2001) findings conclude that the standard suburban subdivision did not differ significantly from the New Urbanist subdivision when it came to sense of

community. Residents of both subdivisions reported similar levels of sense of community even though lot sizes in the standard suburban subdivision were 47 percent larger. The findings concluded by Brown and Cropper (2001) are similar to the findings of this study. Residents of case study 3 and case study 4 shared similar levels of sense of community, based on the four sense of community indicators, yet lots sizes varied from under 2,000 square feet to over 4,200 square feet. As claimed by New Urbanist literature, the New Urbanist subdivision of Brown and Cropper's (2001) study did have more neighborhood contacts than the standard suburban subdivision, yet this difference did not influence a residents' overall sense of community. The findings of this study do differ from that of Brown and Cropper's (2001) in that residents of case study 3 with a residential density of 2.5 dwelling units per acre knew on average 16 or more neighbors while those of case study 4 with a residential density of 9 dwelling units per acre knew between 2 to 5. While the difference in neighborhood social contacts is the reverse of Brown and Cropper's study it still presents the idea that sense of community levels can be similar when the built environment is different. Furthermore it discounts the belief that spatial proximity affects the number of neighborhood social contacts one has as seen in case study 3 and case study 4. The two studies conclude that while the subdivisions may vary in physical characteristics, sense of community can be equal as residents find satisfaction in distinct ways.

In a separate study, Jack Nasar (2003) also tested the claims of New Urbanist's design against traditional suburban subdivisions. Nasar's (2003) objective was to determine a difference in sense of community, if any and whether the use of the automobile was reduced in New Urbanist subdivisions. Nasar's findings conclude that there is no difference in sense of community between New Urbanist subdivisions and traditional or standard suburban subdivisions. Residents of both subdivisions had similar levels of sociability and friendliness determining that residents of tradition suburban subdivisions neighbored with one another to the same extent as residents of New Urbanist subdivisions. This finding is present in the current study as residents of both case study 2 (The Village) and case study 3 (Rancho Grande) admitted to socializing with their neighbors the most. It is also important to note that residents of case study 1 (Berry Gardens) and case study 4 (Oak Park Leisure Gardens) admitted to socializing the least which further illustrates that design does not affect socialization or sense of community in this comparative case study.

Nasar's second finding concludes that New Urbanist subdivisions do in fact have less use of the automobile; however this finding does not significantly influence residents' sense of community. The current study did not examine the use of the automobile directly rather it examined the design features associated with the automobile such as street width, the presence of on-street parking, and the location and orientation of garages. In case study 1 and case study 2 where design features associated with a lower use of the automobile or New Urbanist's

design principles are present there is a disparity in residents' overall sense of community. This finding conflicts with the New Urbanist's belief that a lower use of the auto will foster greater sense of community. The lower use of the auto will encourage street life and pedestrian use; however even with the wide sidewalks, parkstrips, and front porches, the street life and pedestrian use of case study 1 and case study 2 still created disparity in residents' overall sense of community. Furthermore, the narrow 22 feet wide streets and the lack of sidewalks in case study 4 did not contribute to notably different sense of community scores than in case study 3 with wide 40 feet streets, 5 foot sidewalks, and on-street parking. The physical properties influencing automobile and pedestrian use did not affect residents' overall sense of community in Nasar's (2003) findings or in this comparative case study.

Conflicting with all findings mentioned thus far is a study conducted by Hollie Lund (2002). Lund tests the New Urbanist's claim that pedestrian-oriented environments can actually be associated with higher levels of sense of community. This claim is based on the notion that New Urbanist subdivisions are designed to foster social interaction. Two subdivisions in Portland, Oregon were examined and found to have significant differences in sense of community. The Neotraditional development found significantly higher sense of community scores than those of modern suburban subdivisions. The findings by Lund conflict with those found in the current study. Social interaction was not a product of pedestrian-oriented environments in the case of this comparative study. The only

exception to that last statement is case study 2 (The Village). Residents of case study 2 spoke with their neighbors the most frequently, they agreed they could find someone to talk to easily, and they admitted to being active in their neighborhood; the same could not be said about case study 1 (Berry Gardens) who had a similar pedestrian oriented environment. If pedestrian-oriented environments foster greater social interaction it should have been evident in case study 1 and case study 3. The presence of front porches, street trees, shallow setbacks, side and rear loaded garages, parkstrips, and wide sidewalks did not contribute to an increased sense of community as residents of case study 1 admitted to socializing the least of the four case studies being examined. If the claim is correct the steep terrain, deep setbacks, absence of used porches, and wide streets would deter neighbors from interacting which was not the case in case study 3. Because the findings do not support this New Urbanist's claim, there must be other factors influencing social interaction.

All previous studies note the importance of controlled variables and the potential impact they may have on a residents' perceived sense of community. Carmon (1976) found that the greater the homogeneity the more impact the physical setting will have on the social relationships of residents. By careful neighborhood selection each of these studies controlled variables to the best extent possible thus any variation in sense of community was a result of the physical settings. In both previous studies as well as the current study, neighborhoods were controlled for their proximity to commercial centers and open space, terrain, and

climate. With the exception of case study 3, all neighborhoods selected were on flat terrain. The steep terrain of case study 3 does not appear to have impacted residents' overall sense of community. In the case of the current study, respondents were asked to explain their reasoning behind moving into their respected neighborhood. Responses among all four cases studies did not differ greatly as the main motives were the proximity to shopping and schools, safety, and the small town environment. This question eliminated any self-selection bias that may contribute to increased sense of community.

Social demographic variables are more challenging to control for thus creating room for potential impact to residents' sense of community. This study noticed a considerable difference in social demographic variables across all four case studies. For example, 75 percent of case study 2 respondents were female while case study 1 had a 37 percent female response rate. Additionally, 79 percent of case study 2 respondents worked while only 52 percent of respondents in case study 4 worked. Non-spatial variables such as these could possible account for the dissimilarity in sense of community among physically similar subdivisions and why physically distinct subdivisions reported similar sense of community scores.

5.3 Future Research

In order to more fully understand the relationship between the built environment and sense of community further research must be done. New Urbanist design elements may in fact lead to greater sense of community; however, more

empirical evidence is needed to substantiate such a claim. At the moment, there is plenty of planning literature with idealized explanations of how New Urbanist design elements can solve the failures of modern suburban developments but lacks the empirical evidence to back up these assertions.

While this study found little difference in the relationship between physical properties and residents' sense of community, the results could have been otherwise had the study been less broad in scope. Had this study been in more detail and over a longer period of time physical properties may have shown to be a greater contributing factor to residents' sense of community than they were. Having analyzed four separate neighborhoods under the broad categories of sense of community and New Urbanist's design elements, some findings were made. While the findings give us an overview of larger scale neighborhoods, a continuation of this study should conduct a more in-depth analysis on an individual basis. It is suggested for future research to narrow the objectives of the study to specific issues related to sense of community such as social interaction or fulfillment of needs with specific New Urbanist's design elements such as pedestrian-oriented environments or spatial proximity. In addition to the survey, future studies should create activity logs for residents to document both quality and quantity of social interaction over a given period of time in order to further evaluate residents' sense of community. Activity logs can also lead to greater understanding of social networks within neighborhoods. In-depth interviews and participant observations should also be conducted by future researcher further

explain the relationship between New Urbanist design elements and sense of community.

Future research on the topic of sense of community should also include additional analysis of non-spatial or social variables contributing to sense of community. Because the findings of this study rely almost exclusively on non-spatial variables to explain the differences in sense of community scores it is important that future research is carried out on the influence each non-spatial variable has on a resident's sense of community. Future research should also control for non-spatial variables to the best extent possible in order to gain a better understanding of the physical properties that effect sense of community. Activity logs, interviews, and participant observation can provide the in-depth research needed to identify the relationships of individual non-spatial variables that are lacking in this study. Critics of the behavioral and social goals of New Urbanists and environmental determinism dispute the assumption that the built environment plays a deterministic role in human behavior. Because sense of community is multi-dimensional it is impossible to say one dimension is the sole factor contributing to sense of community.

The built environment is a platform or medium in which all other factors influencing sense of community are stimulated which then determines social patterns. For, as Lang (1980) said, "If there is no desire, either manifest or latent, for interaction, then the behavior is unlikely to occur unless It is reinforced

by changes in the social and administrative environment” (149). Spatial properties can affect residents’ sense of community; however, it is an interactive process in which both social and spatial variables interact to create sense of community.

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APPENDIX A- Case Studies Considered

Case Studies	Year Built	Lot Size	Steet Width	Sidewalk Width	Front Porch	Garage Dominated Facades	Stree t Trees	Park Strip
Berry Gradens	2001-2002	6,000-8,987	32 ft	5 ft	Yes	No	Yes	Yes
The Village	1885-	4,290-10,165	42ft	4 ft	Yes	No	Yes	Yes
Rancho Grande	1988-	15,00-42,688	40 ft	5 ft	No	Yes	No	No
Oak Park Leisure Gardens	1979-1984	1,180-1,500	22 ft	N/A	No	Yes	Yes	No
La Cresta	1981-2004	6,011-20,111	42 ft	6 ft	No	Yes	No	No
James Way/Grace	1989	5,048-16,000	37 ft	6 ft	No	Yes	Yes	No
Morning Rise	1997	4,400-6,192	34 ft	7 ft	No	Yes	No	No
Arroyo Del Mar Townhomes	1983	1,200-1486	22 ft	N/A	No	Yes	Yes	No
Cypress Planned Development	1979	1,254-1,499	24 ft	N/A	No	Yes	No	No

APPENDIX B- Informed Consent Form

INFORMED CONSENT

Informed Consent Form to Participate In: Sense of Community and the Built Environment

A research project on sense of community is being conducted by Jamie K. Smith in the Department of City and Regional Planning at Cal Poly, San Luis Obispo. The purpose of the study is to examine the relationship between the built environment at the neighborhood level and the sense of community its residents have.

You are being asked to take part in this study by completing the enclosed questionnaire. Your participation will take approximately 5 minutes. Please be aware that you are not required to participate in this research and you may discontinue your participation at any time without penalty. You may also omit any items on the questionnaire you prefer not to answer.

There is a minor psychological risk of participation in this study if you are dissatisfied with your neighborhood. Please be aware that you may contact the Arroyo Grande Community Development Department, at (805) 473-5420, or Dr. Umut Toker, the research Committee Chair overseeing this study at (805) 756-1592, for assistance.

Your responses will be provided anonymously to protect your privacy. This study could potentially help with the design and development of future residential communities.

If you have questions regarding this study or would like to be Informed of the results when the study is completed, please feel free to contact Jamie K. Smith, student researcher, at Smith.jamiek@verizon.net, or Dr. Umut Toker, Committee Chair, at (805) 756-1592, utoker@calpoly.edu. If you have questions or concerns regarding the manner in which the study is conducted, you may contact Steve Davis, Chair of the Cal Poly Human Subjects Committee, at (805) 765-2754, sdavis@calpoly.edu, or Susan Opava, Dean of Research and Graduate Programs, at (805) 756-1508, sopava@calpoly.edu.

If you agree to voluntarily participate in this research project as described, please indicate your agreement by completing and returning the attached questionnaire. Please retain this consent cover form for your reference, and thank you for your participation in this research.

APPENDIX C- Survey

Neighborhood Questionnaire

Please answer the following questions regarding your current and future residency

1. How long have you lived in this neighborhood?
(1) Less than 1 year (2) 1 to 5 years (3) 6 to 15 years (4) 16 or more years
2. How long do you plan on living in this neighborhood?
(1) Less than 1 year (2) 1 to 5 years (3) 6 to 15 years (4) 16 or more years

The following statements refer to the neighborhood in which you live. Please indicate the degree to which you agree or disagree with each statement. (SA= strongly agree, A= agree, N= neutral, D= disagree, SD= strongly disagree):

3. I get a lot out of living in this neighborhood.
SA A N D SD
4. I am active and involved in this neighborhood.
SA A N D SD
5. People can depend on each other in this community.
SA A N D SD
6. In this community there would be people to turn to if I was upset about something personal.
SA A N D SD
7. If I just feel like talking, I can generally find someone in this community to talk to right away.
SA A N D SD
8. I feel like I do not belong in this neighborhood.
SA A N D SD
9. The type of people I am most similar to do not live in this community.
SA A N D SD
10. I do not like living in this neighborhood.
SA A N D SD
11. This is not a very good community to bring children up in.
SA A N D SD
12. I can confidently let my kids play outside in this neighborhood.
SA A N D SD
13. I chose to move into this community for a particular reason.
SA A N D SD
14. I frequently talk to my neighbors.
SA A N D SD
15. I would call my neighbor at work if I thought someone was breaking into his house.
SA A N D SD
16. If I tried, I could help change some things around here.
SA A N D SD
17. If there is a serious community problem the people could get together and solve it.
SA A N D SD
18. If I were to paint my fence I would consider my neighbor's opinion.
SA A N D

Please respond to the following questions. If your answer is "don't know" or "none," please write that in.

19. How much time do you spend in your neighborhood in a typical week (including nights and weekends)?

20. Are you an owner verse a renter?

21. Why did you choose to live in this neighborhood?

22. How important is this neighborhood to you?

23. How many times a week do you talk to your neighbors?

24. How many neighbors do you know on a first name basis?

Demographic Questions

25. Sex

(a) Male (b) Female

26. Age

(a) Under 18 (b) College student (c) Worker (d) Retired

27. Educational Level

(a) Attended high school but did not graduate

(b) Graduated high school or equivalent

(c) Attended college but did not graduate

(d) Associate degree

(e) Bachelor's degree

(f) Graduate or professional degree

APPENDIX C- Survey Results

Sex

	Male	Female	No response
Oak Park Leisure Gardens	35.48%	58.06%	6.45%
The Village	21.43%	75.00%	3.57%
Berry Gardens	59.26%	37.04%	3.70%
Rancho Grande	46.67%	51.11%	2.22%

Age

	College student	Worker	Retired	No response
Oak Park Leisure Gardens	0.00%	51.61%	41.94%	6.45%
The Village	0.00%	78.57%	17.86%	3.57%
Berry Gardens	0.00%	62.96%	33.33%	3.70%
Rancho Grande	0.00%	55.56%	40.00%	2.22%

Education

	Attended high school but did not graduate	High school graduate	Attended college but did not Grad	Associates degree	Bachelors degree	Graduate or professional	No response
Oak Park Leisure Gardens		9.68%	6.45%	12.90%	19.35%	48.39%	6.45%
The Village		10.71%	10.71%	10.71%	28.57%	35.71%	3.57%
Berry Gardens	0.00%	7.41%	11.11%	3.70%	29.63%	44.44%	3.70%
Rancho Grande	0.00%	0.00%	13.33%	11.11%	40.00%	31.11%	2.22%

Housing Tenure

	Less than one year	1 to 5 years	6 to 15 years	16 + years	No response
Oak Park Leisure Gardens	12.90%	29.03%	41.94%	16.13%	3.23%
The Village	7.14%	21.43%	35.71%	35.71%	0.00%
Berry Gardens	3.70%	33.33%	51.85%	3.70%	3.70%
Rancho Grande	2.22%	20.00%	42.22%	31.11%	2.22%

Expected Housing Tenure

	Less than one year	1 to 5 years	6 to 15 years	16 + years	No response
Oak Park Leisure Gardens	3.23%	29.03%	29.03%	38.71%	3.23%
The Village	0.00%	10.71%	17.86%	71.43%	0.00%
Berry Gardens	7.41%	11.11%	37.04%	33.33%	7.41%
Rancho Grande	0.00%	11.11%	26.67%	51.11%	8.89%

I get a lot out of living in this neighborhood
(Integration & Fulfillment of Needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	45.16%	35.48%	16.13%	6.45%	0.00%	0.00%
The Village	71.43%	25.00%	0.00%	0.00%	0.00%	3.57%
Berry Gardens	11.11%	59.26%	25.93%	3.70%	0.00%	0.00%
Rancho Grande	37.78%	46.67%	11.11%	0.00%	2.22%	0.00%

I'm active and involved in this neighborhood
(Membership)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	9.68%	25.81%	35.48%	25.81%	6.45%	0.00%
The Village	10.71%	57.14%	21.43%	7.14%	0.00%	3.57%
Berry Gardens	3.70%	22.22%	55.56%	7.41%	11.11%	0.00%
Rancho Grande	8.89%	31.11%	37.78%	15.56%	4.44%	0.00%

People can depend on each other in this community
(Integration & Fulfillment of needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	9.68%	58.06%	25.81%	6.45%	3.23%	0.00%
The Village	17.86%	60.71%	17.86%	0.00%	0.00%	3.57%
Berry Gardens	7.41%	55.56%	33.33%	3.70%	0.00%	0.00%
Rancho Grande	13.33%	57.78%	17.78%	4.44%	4.44%	0.00%

In this community there would be people to turn to if I was upset about something
(Integration & Fulfillment of Needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	12.90%	45.16%	19.35%	12.90%	9.68%	0.00%
The Village	14.29%	53.57%	21.43%	7.14%	3.57%	0.00%
Berry Gardens	3.70%	14.81%	51.85%	22.22%	7.41%	0.00%
Rancho Grande	17.78%	33.33%	22.22%	15.56%	6.67%	2.22%

If I just feel like talking, I can generally find someone in this community to talk to
right away
(Integration & Fulfillment of needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	16.13%	35.48%	25.81%	16.13%	9.68%	0.00%
The Village	10.71%	50.00%	32.14%	3.57%	3.57%	0.00%
Berry Gardens	3.70%	29.63%	40.74%	14.81%	11.11%	0.00%
Rancho Grande	17.78%	33.33%	20.00%	15.56%	8.89%	0.00%

I feel like I do not belong in this neighborhood
(Membership)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	3.23%	9.68%	9.68%	22.58%	58.06%	0.00%
The Village	0.00%	0.00%	10.71%	21.43%	64.29%	0.00%
Berry Gardens	0.00%	3.70%	14.81%	40.74%	40.74%	0.00%
Rancho Grande	0.00%	6.67%	8.89%	33.33%	46.67%	2.22%

The type of people I am most similar to do not live in this community
(Membership)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	9.68%	12.90%	22.58%	32.26%	25.81%	0.00%
The Village	0.00%	10.71%	28.57%	35.71%	25.00%	0.00%
Berry Gardens	3.70%	18.52%	11.11%	51.85%	14.81%	0.00%
Rancho Grande	2.22%	4.44%	28.89%	37.78%	22.22%	2.22%

I do not like living in this neighborhood
(Integration & Fulfillment of needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	3.23%	0.00%	9.68%	25.81%	64.52%	0.00%
The Village	0.00%	0.00%	0.00%	21.43%	78.57%	0.00%
Berry Gardens	3.70%	0.00%	7.41%	37.04%	51.85%	0.00%
Rancho Grande	0.00%	4.44%	4.44%	26.67%	62.22%	2.22%

This is not a very good community to bring children up in
(Integration & Fulfillment of Needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	6.45%	3.23%	29.03%	25.81%	38.71%	0.00%
The Village	0.00%	0.00%	3.57%	7.14%	89.29%	0.00%
Berry Gardens	3.70%	7.41%	14.81%	25.93%	48.15%	0.00%
Rancho Grande	0.00%	2.22%	8.89%	22.22%	64.44%	0.00%

I can confidently let my kids play outside in this neighborhood
(Integration & Fulfillment of needs)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	9.68%	32.26%	38.71%	3.23%	3.23%	16.13%
The Village	28.57%	35.71%	17.86%	3.57%	0.00%	14.29%
Berry Gardens	22.22%	40.74%	25.93%	7.41%	0.00%	3.70%
Rancho Grande	28.89%	44.44%	20.00%	0.00%	0.00%	4.44%

I choose to move into this community for a particular reason

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	31.11%	55.56%	6.67%	4.44%	0.00%	0.00%
The Village	42.86%	42.86%	14.29%	0.00%	0.00%	0.00%
Berry Gardens	25.93%	59.26%	14.81%	0.00%	0.00%	0.00%
Rancho Grande	31.11%	55.56%	6.67%	4.44%	0.00%	0.00%

I frequently talk to my neighbors
(Shared Emotional Connection)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	9.68%	45.16%	29.03%	12.90%	3.23%	3.23%
The Village	35.71%	42.86%	10.71%	10.71%	0.00%	0.00%
Berry Gardens	11.11%	37.04%	37.04%	7.41%	7.41%	0.00%
Rancho Grande	15.56%	46.67%	20.00%	11.11%	4.44%	0.00%

I would call my neighbor at work if I thought someone was breaking into his house
(Shared Emotional Connection)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	32.26%	51.61%	9.68%	3.23%	3.23%	0.00%
The Village	53.57%	25.00%	3.57%	14.29%	3.57%	0.00%
Berry Gardens	14.81%	55.56%	11.11%	7.41%	11.11%	0.00%
Rancho Grande	44.44%	37.78%	11.11%	2.22%	2.22%	0.00%

If I tried I could help change something around here
(Influence)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	9.68%	45.16%	41.94%	3.23%	0.00%	3.23%
The Village	14.29%	42.86%	25.00%	14.29%	0.00%	0.00%
Berry Gardens	3.70%	33.33%	51.85%	11.11%	0.00%	0.00%
Rancho Grande	13.33%	57.78%	22.22%	4.44%	0.00%	0.00%

If there is a serious community problem the people could get together and solve it (Influence)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	12.90%	61.29%	19.35%	3.23%	3.23%	3.23%
The Village	14.29%	64.29%	21.43%	0.00%	0.00%	0.00%
Berry Gardens	3.70%	59.26%	29.63%	7.41%	0.00%	0.00%
Rancho Grande	15.56%	57.78%	15.56%	8.89%	0.00%	0.00%

If I were to paint my fence I would consider my neighbor's opinion
(Influence)

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	No response
Oak Park Leisure Gardens	22.58%	54.84%	16.13%	6.45%	0.00%	3.23%
The Village	28.57%	42.86%	21.43%	7.14%	0.00%	0.00%
Berry Gardens	14.81%	37.04%	29.63%	18.52%	0.00%	0.00%
Rancho Grande	35.56%	53.33%	4.44%	2.22%	0.00%	0.00%