A DESIGN FOR THE EVALUATION OF NEIGHBOURHOOD DESIGN GUIDELINES

By

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ABSTRACT

In 1982, after considerable discussion and negotiation, the City of Edmonton municipal council approved a neighbourhood plan which had as one of its components a set of Design Guidelines intended to mitigate the perceived negative effects of the high density residential environment which the plan proposed. As well, the developers' concept for the area promoted the creation of a highly interactive and cohesive community, free of crime and with a strong sense of identity as promoted in Oscar Newman's book *Defensible Space*.

As yet the neighbourhood has not been built, but once the area is developed and occupied, it is expected that the City Administration will conduct an evaluation of the Neighbourhood to determine whether the design concept as expressed in the Guidelines was effective, and effected, in the manner initially proposed.

This thesis will undertake the initial stages of this evaluation, by examining the theory of neighbourhoods and neighbouring as well as the past experience of other cities with respect to neighbourhood development. This part of the thesis takes the form of extensive literature review, and results in the identification of four major and several minor topics which should be examined in the eventual evaluation of Terra Losa.

The thesis then identifies the implicit and explicit goals of the Design Guidelines. In a discussion based on the results of the literature review, the relevance and feasibility of the goals is examined.

Finally, and again based on the literature, particularly the case studies, an evaluation of the Defensible Space concept is presented and suggestions are made as to the procedures to be followed in eventually conducting a neighbourhood evaluation.
The thesis concludes that although the intentions of the developers' concept is laudable, that the effectiveness of physical design in creation of a strong social community is limited, though it appears from past experience that the Guidelines, if properly implemented, would be effective in achieving this limited level of influence and relatively high levels of residential satisfaction.
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CHAPTER ONE

INTRODUCTION

This thesis will design an evaluation of the effectiveness of the design guidelines placed on the Terra Losa Neighbourhood in west Edmonton. While allowing a residential density of 79.0 persons per gross developable acre (185/ha), considered by the City to be very high for a peripheral area, the City required the developer to prepare design guidelines, based on the concepts of Defensible Space (Newman, 1973) and Crime Prevention Through Environmental Design in an attempt to avoid the problems generally associated with high density living. In addition, the developers agreed to provide, at their expense, a recreational centre in the neighbourhood to act as a focus for the community.

Rationale for the Proposal

The purpose of the thesis is to set the stage for an evaluation of the effectiveness of the Terra Losa guidelines, once the neighbourhood is built and occupied.

On a scientific level, the objective of this thesis will be to derive from the current literature a research design which could guide subsequent examination of the effects of particular design elements on human behavior patterns and residential satisfaction.

From a more practical perspective, the design can be used, once the neighbourhood is built, as the first stage in preparing a response to the request of several City aldermen that the area be monitored to determine the effects of the guidelines on the neighbourhood and the "success" of the development concept.
The Planning Department should find the results of this study useful in several other respects. First, the substance of this thesis will allow the preparation of an evaluation instrument based on classic studies of a similar nature and especially on literature published after Newman's "Defensible Space", which was the foundation of the guidelines.

Secondly, the Planning Department could use the evaluation of the goals of the neighbourhood concept as an information source in their evaluation of similar proposals and the formulation of their recommendations to the approving bodies. It is possible that other developers, having seen the density approved for Terra Losa and faced with increasing costs for utility service extensions, will in the future propose similar neighbourhoods elsewhere. Indeed, the City's own General Municipal Plan supports the intensification of land use and the reduction in consumption of agricultural land. The Planning Department should be prepared to make informed recommendations regarding these proposals.

The information presented in this thesis could be adapted for use in the review of policy relating to high density residential land uses, residential design and plan implementation.

Finally, the results of an extensive literature review may aid the City staff in their review of detailed development proposals, not only in Terra Losa but throughout the City, by identifying elements of design which have been shown to affect residential satisfaction, security and so on.

Scope of the Study

The area under consideration is the residential portion of the Terra Losa Neighbourhood. Its boundaries were established in the West Jasper Place Outline Plan as being 100 Avenue on the north, 95 Avenue on the
south, 170 Street on the east and 178 Street on the west. Though these may not conform to the eventual residents' perception of their neighbourhood's boundaries, they will be used here since they prescribe the area covered by the design guidelines being evaluated.

No construction has taken place in the neighbourhood as yet and timing of development will depend on the economic climate. The thesis therefore recommends a design for the evaluation, but does not undertake it. It includes recommendations about the timing of the actual evaluation, based on the number of units occupied, the types of units available and the length of occupancy of the eventual residents.

Organization

Chapter Two will describe the neighbourhood, the derivation of the guidelines, the content of the guidelines and a description of the owners' group's concept for the neighbourhood.

Chapter Three will consist of an examination of current literature on medium and high density housing, defensible space, neighbourhoods, neighbouring, community cohesiveness and residential satisfaction, with a view to identifying the aspects of the neighbourhood which should be studied in the evaluation and what results have been obtained from previous studies of these subjects which might be used in comparison of results.

Chapter Four will continue the literature review begun in Chapter Three and discusses other information of a less subjective nature which should be collected during the evaluation in order to provide the most complete picture possible of the neighbourhood being studied.

Chapter Five will identify the stated and implicit goals for the neighbourhood of both the landowners' group and the City. These will be
discussed in light of the information disclosed in the literature review, in order that their validity and relevance can be ascertained.

In Chapter Six, suggestions will be made for the methodology to be used in subsequent stages of the evaluation. Threats to validity and suggestions for measurement of obscure or sensitive variables will be included, together with a discussion of aspects which are not included in the evaluation design and the reasons for their deletion.

The conclusion of the thesis will suggest whether or not the evaluation should continue and the necessity for amendments to the guidelines before they are implemented.
CHAPTER TWO

BACKGROUND OF THE STUDY

This chapter will explain the context in which the evaluation design is being considered. A description of the neighbourhood's site is provided, together with a description of its planning and development history. As well, short summaries of the design guidelines imposed on the area and of the Defensible Space concept are included.

The Site

Terra Losa is a neighbourhood of approximately 62 hectares in suburban west Edmonton, Alberta, located between 95 and 100 Avenues and 170 and 178 Streets. Development of this area has lagged behind the remainder of the West Jasper Place Outline Plan area, partly because of ownership problems and partly because of the very poor soil conditions. There are several layers of peat nearly 3 m deep in some places and extensive areas of unstable fill and poor drainage. This latter was a major determinant of the eventual plan for the neighbourhood. As well, for years ownership interests had been divided and in dispute.

As a point of interest, the Neighbourhood was named after one of the first Italian pioneers of the area, Victor Losa, who owned land in the vicinity and was involved in community affairs.

The Plan and its History

As in other parts of suburban Edmonton, there is an Outline Plan (in this case, West Jasper Place) containing a number of neighbourhoods which provided generalized guidelines for development. These are further expanded in the Neighbourhood Structure Plan (as Terra Losa), which set the
density, road pattern, land use mix and servicing concept for an area usually based on public elementary school catchment area boundaries. These Neighbourhood Structure Plans (NSP's) are prepared by the landowner, reviewed by Planning, amended as necessary and forwarded to the Municipal Planning Commission, an advisory body and thence with a recommendation to City Council, who consider the Plan in the form of a Bylaw. It is not until this Bylaw has received Third Reading that applications for more detailed development and for zoning can be considered.

In March, 1981, the owners' group presented a draft Neighbourhood Structure Plan for the consideration of the City Planning Department. The owners proposed a mixture of residential uses at a density of 78.4 persons per gross developable acre (190 persons/ha), ranging in form from row housing to high rise apartments and commercial/office and light industrial development. After extensive review and negotiation failed to resolve major points of difference, the Planning Department recommended to the Municipal Planning Commission that the plan not be recommended to Council for approval. The basis of the non-support was the poor transition between this neighbourhood's high density residential uses and the lower densities of surrounding neighbourhoods, the misuse of the commercial/office zone in the suburban area (it was designed for use in the fringe areas of downtown) and non-conformance with several General Municipal Plan policies regarding commercial uses in general. It should be noted that although the density proposed was very high in comparison to other approved neighbourhood plans, this proposal was not rejected because of its density. An alternative recommendation, proposing tabling pending revision of the plan to provide solutions to these problems, was also placed before Commission, but on July
9, 1981, the Municipal Planning Commission unanimously recommended non-support of the application. The owners decided to proceed to Council in spite of this and on September 22, 1981, the Plan was presented to them. The Bylaw was laid over until October 13, 1981 when the public hearing was held. At that time, and for the first time, the owners' representative suggested that they had intended to develop the neighbourhood under guidelines derived from the "Defensible Space" concept of Oscar Newman. The representative also suggested that the owners were prepared to construct a community centre for the neighbourhood which would provide a focus for the neighbourhood community life.

It should be noted that City Council had been asked to consider numerous applications for increasing densities in other neighbourhoods throughout the City, and especially in West Jasper Place, for the past two or three years. These applications were usually opposed by adjacent residents on the basis of perceived problems accompanying an increase in density, including among other things potential increases in crime rates, vandalism, undesirable residents, area instability and the like. Council was therefore understandably hesitant about accepting so dense a plan and this was obvious from their questions of both Planning and the owners' representative.

The Bylaw was referred to the Planning Department for further negotiation and for response to several questions.

A very preliminary draft of the guidelines was submitted to Planning in November, 1981. Discussions continued and the guidelines were continually expanded and refined until May, 1982. Simultaneously, a myriad of legal agreements were being drawn up by which the guidelines would be imposed on
all developments in Terra Losa, whether proposed by the initial or any subsequent owner. Similar complex agreements regarding construction of, responsibility for and membership in the community centre were prepared. Changes to the design of the neighbourhood responding to the concerns originally expressed by Planning were also undertaken. Densities were reduced at those edges of the neighbourhood adjacent to lower density residential areas and the very intense commercial/office developments were amended to light industrial. The final version of the plan is shown in Figure 1.

Council considered the Bylaw again and gave it Third Reading on May 11, 1982 (City of Edmonton, 1981-2).

The Design Guidelines

The Guidelines began as very general, almost self-evident statements categorized under five main headings:

a) boundary definition;

b) neighbourhood definition (or identification);

c) recreational and social features;

d) architectural requirements; and

e) energy features (City of Edmonton, 1981).

Having been directed to negotiate with the owners, the Planning Department advised them that considerably more detail would have to be provided in order that future development proposals could be fairly and consistently evaluated. Several more detailed drafts were subsequently reviewed and comments from other affected departments such as Police, Transportation Systems Design, and Water and Sanitation were incorporated. The final draft of the Guidelines was received on May 3, 1982. This is included in Appendix I.
ROW HOUSING
MEDIUM DENSITY MULTIPLE-FAMILY
LOW RISE APARTMENT
MEDIUM RISE APARTMENT
HIGH RISE APARTMENT
NEIGHBOURHOOD CONVENIENCE COMMERCIAL
INDUSTRIAL BUSINESS
PUBLIC PARK
URBAN RESERVE
URBAN SERVICE
DIRECT DEVELOPMENT CONTROL
LAKE
LIMIT OF NEIGHBOURHOOD STRUCTURE PLAN
• COMMUNITY RECREATIONAL CENTRE

FIGURE 1
TERRA LOSA
Neighbourhood Structure Plan

SOURCE: THE CITY OF EDMONTON PLANNING DEPARTMENT
The objectives of the Guidelines are stated in General Provisions, applicable to all sites, which stress the need for human scale, individuality, variety and the consideration of adjacent developments in designs for individual projects.

Relating to Defensible Space, the Guidelines explained the general philosophy of the concept and state Design Provisions which its authors felt would implement it. Specifically, definition of spaces (public, semi-public, semi-private) to allow residents to identify with "their" spaces, increased opportunity for surveillance of semi-public and semi-private spaces and encouragement of social interaction through design of interior spaces are mentioned. Signage and landscaping are to be used as a "unifying" factor in the neighbourhood and also to provide definition of territory. The Architectural Provisions expand on the General Provisions, encouraging variety in unit size, height, shape and massing but with unifying elements in terms of sloping roofs and earth tone and natural material exterior finishes.

The community centre is also described in the Guidelines. The concept plan for the centre stresses the flexibility of the interior space which is to contain several rooms which could be used for day care, meetings, small group functions, a limited number of indoor recreational activities (games, etc.), change and locker rooms, kitchen and administrative space. The centre is designed to be the focal point of community social interaction. The owners' legal agreements require that the Community Center be constructed by the time the first 100 residential units are occupied.

The Development Concept

Since their first submission of the Neighbourhood Structure Plan
proposal to the Planning Department, the developers have emphasized the unique nature of this Neighbourhood. As stated previously, the poor soil conditions and the costs of remedial measures required special consideration in the design. The owners therefore suggested that the Neighbourhood, especially in the areas with the worst soil conditions, be developed with high density uses which would in any case require deep excavations for foundations and would provide increased return on this initial investment.

A mix of land uses (residential and light industrial/office) was proposed for several reasons. First, both 100 Avenue and 170 Street are major arterial roadways which would require installation of noise attenuation devices at the developer's expense if adjacent land uses were residential. Light industrial uses could be employed as a buffer between traffic noise and residential uses, while still bringing in revenue. Secondly, the owners saw an advantage in providing opportunity for development of a high quality office park (a typical development under Edmonton's light industrial zoning) taking advantage of the good access to the area, the proximity of an industrial area to the north of the neighbourhood and the City's policy encouraging office decentralization. It was suggested that the residential and office park areas would provide employment and living space in the same neighbourhood, making it a truly "urban" community.

The owners' group envisioned that the eventual residents of the Neighbourhood would in the main be childless households and the majority of the dwelling units would not be ground-related (i.e. not having direct, individual access to ground level). Since the remainder of West Jasper
Place is generally considered to be a middle to upper-middle class area, it is likely that this Neighbourhood will be of a similar nature.

The Neighbourhood will likely provide a mixture of rental and owned projects on individual parcels; ownership type will not vary within projects but will between them. The lower density developments are more likely to be owner-occupied than the high density projects, with the possible exception of a luxury high rise condominium to be built, if ever, in the late stages of development.

Once the Design Guidelines were introduced, the owners' group began to emphasize the efforts they would make to create a physical community identity and a "sense of community" among the future residents. This effort is concentrated in two areas:

a) the provision of a "theme" in the area, through uniformity in signage, landscaping and roof lines and similarity in exterior finishes; and

b) the provision of a potential focal point for the Neighbourhood in the shape of the multi-purpose community centre.

The marketing strategy for Terra Losa will definitely emphasize the high level of neighbourhood involvement and interaction that the owners feel the Neighbourhood's Design Guidelines will encourage.

The Present Status of Terra Losa

The Neighbourhood remains undeveloped, pending execution of the agreements pertaining to the community centre by all owners which must take place before the plan of subdivision can be registered. The entire Neighbourhood has been given detailed zoning.

Due to the present economic climate in Alberta, the nation-wide slump
in construction and the added problem of a glut of rental accommodations in Edmonton, it is difficult to estimate when construction will begin. The original timetable for development had construction commencing in 1983 and first occupancy later the same year. The residential area was to be developed first with the business park gradually coming on stream. The present economic situation has required that the business park be developed first, for reasons of cash flow. The developers expect that the first residential projects to develop will be the row housing sites, with the medium and high rise projects likely developing last. Full development is expected to occur in three to five years.

The owners feel, in spite of the large number of built and vacant units and a similarly large number of subdivided and zoned sites available for immediate construction both in West Jasper Place and elsewhere in the City, that Terra Losa can be developed and marketed as a "unique" neighbourhood and will not be competing with these standard projects. The owners expect the Neighbourhood to be, in fact, a leader in the market.

The Defensible Space Concept

The Terra Losa Guidelines were drawn up following the principles of Defensible Space as expressed by Oscar Newman in his book of the same name (1973). This section provides an overview of this work so that the literature review which follows can be considered with the concept in mind.

Newman's work dealt almost exclusively with lower income residents of public housing sites in the central areas of major American cities where both vandalism and crimes against persons were serious problems. It was his belief that one of the causes of these problems was the physical environment, specifically the size of the projects, their height and the lack
of opportunity for neighbours' surveillance of non-private areas (Porteous, 1977, 298). The designs of the structures were offering places for crimes to occur, especially relatively unpremeditated crimes of opportunity. Newman argued that architecture could prevent encounters as well as encourage them (1973, 12) and he derived both an architectural concept, defensible space, and guidelines for design which would allow its implementation.

Newman defines "Defensible Space" as

a surrogate term for the range of mechanisms - real and symbolic barriers, strongly defined areas of influence and improved opportunities for surveillance - that combine to bring an environment under the control of its residents. (1973, 3)

This control is essentially a form of territorial expression (see Chapter Three) and it is as important as a method of engendering a sense of security in the residents toward their home and environs as it is an approach to deterring the potential criminal from violating that territory.

The guidelines which Newman derived are intended to encourage in residents a proprietary attitude toward their environment which is intended to result in physical manifestations of that attitude. These will be recognized by the potential criminal, who will perceive the environment as hostile. In turn, the resident who has developed an attachment to the environment and a feeling of concern for it and for his neighbours, perceives it as less hostile and his sense of personal security is enhanced.

Newman proposes four "design elements" to aid in the creation of "Defensible Spaces":

a) clear definition of territories and their boundaries and the
responsibilities for them, creating a hierarchy of semi-public, semi-private and private spaces. Residents would then adopt the appropriate spaces and "defend" them (for explanation of territorial behavior, see Chapter Three);

b) provision in the design the opportunity for surveillance of interior and exterior non-public spaces by the residents, through placement of windows and doors;

c) use of building forms and finishes which do not signify to the observer the "isolation and vulnerability" of the residents; and

d) placement of housing developments in suitable locations away from areas of threat or insufficient services (Newman, 1973, 9).

Newman's concept is clearly that of an architectural determinist. In fact, he states in a book on which "Defensible Space" was based that

... we are now certain that the physical construct of residential environments can elicit attitudes and behavior on the part of residents which contribute to a major way toward insuring their security; that the form of buildings and their groupings enable inhabitants to undertake a significant policing function ... which act(s) as (an) important constraint against antisocial behavior. (Newman 1973, xii)

This attitude is strongly exhibited throughout the body of his work but in the summary Newman includes a caveat:

We are concerned that some might read into our work the implication that architectural design can have a direct causal effect on social interactions. Architecture operates more in the area of "influence" than control. It can create a setting conducive to realizing the potential of mutual concern. It does not and cannot manipulate people towards these feelings but rather allows mutually benefitting attitudes to surface (Newman, 1973, 207).

A critique of this concept is provided in Chapter Five.

Summary

This chapter has set the scene for the evaluation of the Design
Guidelines. Through this examination of the goal statements of the Design Guidelines and the Defensible Space concept, areas of interest can be identified for further consideration in the next chapter, the literature review.
CHAPTER THREE

PROPOSED CONTENTS OF THE EVALUATION

The purpose of this chapter is to identify the major topics which should be investigated in a post-occupancy evaluation of Terra Losa.

Each topic will be examined from two points of view: the theoretical constructs which make it important in evaluating the Neighbourhood, and which justify its inclusion in further studies; and in terms of the results of studies of other neighbourhoods or projects as a basis for comparison with the eventual results of the Terra Losa evaluation.

The major topics were identified on the basis of their repeated appearance in the body of literature dealing with neighbourhoods. The topics are highly interrelated - one may be postulated as a causal, or a contributing, factor in the occurrence of another; almost all of the neighbourhood and resident characteristics affect more than one topic. For that reason, the sections of this chapter dealing with each specific topic will deal with that topic as a dependent variable; in other chapters that same topic may be cited as an independent variable in the explanation of neighbourhood satisfaction. An illustrative model of the relationships between each topic and the factors which affect it will be provided.

The literature surveyed includes selections from the fields of planning, sociology, social and environmental psychology, and criminology. "Classic" studies, critiques, field surveys, text book summaries and recent journal articles were included to provide as broad a view as possible of the theoretical background and practical application of each of the topics discussed and neighbourhood evaluation overall.
Residential Satisfaction

Residential satisfaction has been defined as "...the absence of complaint when opportunity for complaint is provided" (Schorr, 1970, 713). It relates to residents' opinions of their total living environment, using their own standards in the evaluation. It is an entirely subjective measure, since it presents a view of the objective reality of the physical environment through the residents' perceptions, which are colored by non-physical parameters such as values, needs, attitudes and expectations. It has been suggested that both the objective indicators and subjective assessments of residential environments should be studied, so that human meaning is added to strict facts (Lansing and Rodgers, 1975, 302-303).

Residential satisfaction has come to be studied at two scales: the micro-neighbourhood, or area of immediate concern, and the macro-neighbourhood, a larger area. The former has been defined as the area within one block (Coleman, 1978, 3) or within 5 - 6 houses (Marans and Rodgers, 1975, 331) for single family housing forms, and within the same building, the same wing, or the same floor for apartment-dwellers (Coleman, 1978, 4). It is the area where most residents have daily experiences, where young children are raised, where informal interaction occurs and where leisure activities are pursued. As well, it is where most homeowners' investments are centered (Marans and Rodgers, 1975, 331).

At the larger scale, interests are more generalized and less personal, and are based more on accessibility, services available, security, and convenience (Marans and Rodgers, 1975, 325). Studies have found that overall satisfaction is more closely related to the attitude toward the micro-environment than to the macro neighbourhood or the community at large (Marans and Rodgers, 1975, 300).
These two types of "neighbourhoods" are defined by individuals on the basis of experiences, perceptions and behavior patterns and therefore their boundaries vary considerably among a population.

It is necessary to keep these two scales of reference in mind when evaluating residents' satisfactions, so that the relative importance of factors are judged with the same weight that the residents would place on them.

In an explanatory model, resident satisfaction can be viewed as being dependent on two classes of variables: those relating to the physical environment, and those related to the social and psychological makeup of the resident population (see Figure 2). These are roughly equivalent to the objective and subjective aspects discussed above.

PHYSICAL VARIABLES

A review of the case studies in the literature has found that the single most significant physical factor in determining overall satisfaction is a high standard of physical appearance and maintenance for both the neighbourhood and individual properties (Marans and Rodgers, 1975, 333; Zehner, 1971, 383; Galster and Hesser, 1981, 748; Lansing and Marans, 1978; Great Britain, Dept. of Environment, 1972, 26; Norcross and Hysom, 1968, 30; Becker, 1974, 13; Norcross, 1973, 15). Appearance, for this purpose, could be defined to include factors such as the color and size of buildings, landscaping, spaciousness, variety of building, maintenance level, bulk and relationships of buildings, and the nature of spaces created (Great Britain, Dept. of Environment, 1972, 4). In some studies, this high quality of environment has been correlated to pride in the neighbourhood (Coleman, 1978, 5-6; Great Britain, Dept. of Environment, 1972, 26).
PHYSICAL VARIABLES (Objective)

- Appearance
- Maintenance Level
- Degree to which Neighbourhood is planned
- Site Design
- Recreation Facilities
- Dwelling Unit Type

SOCIAL/PSYCHOLOGICAL VARIABLES (Subjective)

- Friendliness of Neighbours (perceived and actual)
- Degree of Control/Choice including - privacy - personalization - security
- Resident Characteristics - class/status - education level - age - life cycle stage - length of residence
- level of maintenance
- management
- willingness to continue residence
- sense of safety/security

RESIDENTIAL SATISFACTION

- Tenure Type
- Management
- Crowding

most influential factor

FIGURE 2 - DESCRIPTIVE MODEL - FACTORS AFFECTING AND INDICATORS OF RESIDENTIAL SATISFACTION
Another physical variable could be called the "planning attributes" of the neighbourhood. Several studies have found that residents of fully-planned neighbourhoods are more satisfied than those in less planned areas (Zehner, 1971, 384; Marans and Rodgers, 1975, 323), and the residents of fully-planned neighbourhoods are more likely to recognize a macro-neighbourhood than those in less-planned suburbs (Zehner, 1971, 383).

The design of the site is indirectly related to overall satisfaction, since by definition it is a major contributing factor to the environment's appearance. Coleman (1978, 10-13) found that upper and middle class residents felt that items related to "good design" were desirable in neighbourhoods; this factor was not mentioned by working and lower class residents.

Some of the design features significantly related to high overall satisfaction are good views from units, especially from living room and kitchen windows, provision of adequate play space (Great Britain, Dept. of Environment, 1972, 26) and different play spaces suited to different age groups, especially at higher densities (Becker, 1974, 16). Francescato et al (1975a, 156) found in a large survey of private multiple housing projects throughout the U.S., that parking arrangements and recreational facilities were not related to overall satisfaction. Lansing and Marans (1969, 198) in studying planned communities found that the land use character, proximity to adjacent structures, setbacks, amount of useable outdoor space, offstreet parking provisions, and tree cover had no significant effect on residential satisfaction. However, in a study of townhouse developments, Norcross (1973, 9) stated that residents wanted space available around and near their unit, pleasant views, parking areas
relieved with landscaping, and adequate space between clusters (also Becker, 1974, 7) and short rows of units rather than long lines. Recreation facilities were sources of satisfaction in the projects surveyed by Norcross. The lack of consistency between survey results may be due to the differences in the characteristics of the residential populations surveyed (further explained later in this section and in Chapter Four), and differences in the location of the sites surveyed, suggesting that climate, natural vegetation and the like may affect residents' expectations.

Marans and Rodgers (1975, 333) found that on a micro-neighbourhood scale, residents were less satisfied if the area was judged to have too little outdoor space, too much traffic, and few trees.

Sanoff and Sawhney point out that for both neighbourhood and dwelling unit attributes, respondents' preferences toward the "most important" factors in an ideal environment were not necessarily (in fact mostly not) factors unsatisfactory in their existing environments (1972, 13-8-4). Care must therefore obviously be taken to identify to which environment, the real or the ideal, the responses refer.

Some studies (Great Britain, Dept. of Environment, 1972, 2; Galster and Hesser, 1981, 748) showed that residential satisfaction was not affected by unit type occupied, though Francescato (1975b, 6) showed that the factors determining satisfaction varied with unit type. Marcus and Hogue (1975, 34) contend that all high rise dwellers carry a memory of or aspiration to a single family dwelling. Michelson (1969, 20) also found that the more self-contained the unit the greater the satisfaction, and that 85% of the persons surveyed aspired to a single family dwelling (no one aspired to walkups). These seemingly contradictory results are explained by Michelson (1977, 365):
what satisfies families in high rise apartments in the short run is not what would satisfy them in the long run, nor in the short run either if they could not move elsewhere in the long run.

Finally, several studies have revealed that variety in the environment, evidenced through changes in height, setback, roof lines, shape, pattern and form, are important sources of satisfaction (Norcross, 1973, 9; Great Britain, Dept. of Environment, 1972, 4, 26; Becker, 1974, 13).

On a smaller scale, satisfaction with the dwelling unit itself is considered to have a fairly significant relationship with expressions of overall satisfaction (Great Britain, Dept. of Environment, 1972, 26; Michelson, 1969, 20). Rosow has stated that:

there is little evidence that satisfaction with new housing is related to liveability resulting from design per se except when there is a significant improvement in housing, especially where occupants are particularly conscious of housing in highly literate, sophisticated terms (1961, 129).

The design of semi-public interior spaces in multiple family housing projects was investigated by Becker (1974; 16-20), and he identified some sources of satisfaction relating to them. Lobbies should be visually pleasing, and designed to allow for interaction and surveillance. Corridors should be adequately lit, quiet, and not used as children's play spaces.

Though density could be considered a component of the site plan, it has received a significant amount of attention as a factor in residential satisfaction and so warrants isolated consideration. (Density, defined as the physical measure of number of people per unit area, as it relates to crowding, defined as the perception of available space, is discussed in Chapter Four.) Marans, Lansing and Zehner (1970, 117) found that overall satisfaction is lowest in high density projects and state that "the site
plan of neighbourhoods has less effect on reported satisfaction than density. Another analysis of the same study revealed that the effects of density were felt especially at the micro-neighbourhood scale (Marans and Rodgers, 1975, 339), and similar studies have identified low density as a source of satisfaction (Galster and Hesser, 1981, 148; Norcross, 1973, 9). Other studies, however, have found a negative relationship between density and satisfaction (Great Britain, Dept. of Environment, 1972, 2; Francescato, 1975b, 6) indicating that the specifics of a site may vary results obtained. There seems to be a general tendency among studies such as those of Marans, Rodgers, Galster and Hesser and Norcross to equate "high density" - a physical measure - with feelings of crowding - a perception (Schmidt et al, 1979, 106). Investigators as well as the neighbourhood respondents may confuse density and crowding, as in several cases authors conclude that density was the problem when respondents indicated a dislike for feeling either too close together or too crowded. The inaccuracy of this conclusion is discussed in Chapter Four.

"Management" has been identified as a determinant of satisfaction in several studies. This factor is particularly important in multiple housing developments, where non-private spaces exist and require maintenance. The attitude of management towards the residents, the maintenance level achieved, and the responsiveness to complaints and requests for service are mentioned as measures of the adequacy of this factor (Francescato, 1975b, 8; Becker, 1974, 27; Michelson, 1977, 292).

Very little appeared in the literature comparing the satisfaction levels of owners versus tenants. Where findings did appear, it seems owners are more satisfied than renters (Schorr, 1970, 714) and that owners
do not like renters to be too close to them (Norcross, 1973, 8). Both these responses could be explained by the greater investment (both economic and psychological) which the owner has in the neighbourhood. Lack of attention to this factor in the literature could be due to the types of sites chosen in each particular survey - they tended to study either all-owned or all-rental sites, so that comparison was not possible.

SOCIAL AND PSYCHOLOGICAL VARIABLES

The single variable of any type which most significantly affects the level of residential satisfaction is the friendliness of neighbours (Zehner, 1971, 383; Lansing and Marans, 1969, 199; Norcross, 1973, 15; Marans and Rodgers, 1975, 300, 333; Schorr, 1970, 714; Becker, 1974, 187). Surprisingly, perception of friendliness is sufficient to affect satisfaction; it does not necessarily have to be substantiated by frequent contacts (Zehner, 1972, 176) nor is it directly related to the actual number of friends or acquaintances in the development (Becker, 1974, 180). Coleman (1978, 10-11) has suggested this factor is more important in middle and working class neighbourhoods than those of the upper class.

A second variable affecting the degree of satisfaction is the degree of control exercised over his environment by the resident. (Control is discussed in detail in another section of this chapter.) In multiple housing projects, the resident is very often allowed direct control over only his private space, and there are rules which apply to that as well. Michelson (1977, 292) found that the degree of importance placed on items related to dissatisfaction might correspond to the amount of control the resident possesses to change them. Kuper (1953, 165) likewise found that negative comments regarding site design related to the removal of personal
choice from the decision to interact or come into contact with neighbours - in a word, privacy.

Most of the case studies reviewed listed aspects of privacy, for example, noise levels, hearing neighbours, outdoor privacy, party walls, and so on (Marans and Rodgers, 1975, 333; Norcross, 1973, 9; Francescato, 1975a, 156; Lansing and Marans, 1969, 198; Michelson, 1969, 20; Zehner, 1971, 383; Coleman, 1978, 10-13; Great Britain, Dept. of Environment, 1972, 26). Becker (1974, 17) discovered that design features were not as important to maintaining satisfactory levels of privacy as the social norms established by residents and management. Lack of privacy has not been directly correlated with density (Great Britain, Dept. of Environment, 1972, 5) though there is evidence that the desire for lower density arises out of a felt need for privacy, quiet and outdoor space (Marans, Lansing and Zehner, 1970, 122). Apparently, the social class of residents affects the desire for privacy: among upper classes, privacy rates as a highly desirable attribute (Coleman, 1978, 10), while similar value is placed on it in the lower class, since it can't be taken for granted (Rosow, 1961, 129). Privacy is of particular importance in multiple housing forms, especially high rises (Francescato, 1975b, 6-8). Lack of privacy (internal and external) has been cited as a significant reason for moving (Michelson, 1969, 26).

Personalization - the individualization by residents of their space - is another aspect of control which enhances residential satisfaction. Becker (1974, 25) found that nearly 70% of respondents desired the chance to modify interior and semi-private outdoor space. He suggested that type of activity affects the pride and involvement in apartments and developments and reduces management's maintenance costs and responsibilities.
A final manifestation of control is the importance of a sense of security to residents, and this was mentioned in several studies (Francescato, 1975b, 8; Marans and Rodgers, 1975, 325; Galster and Hesser, 1981, 746; Becker, 1974, 21; Coleman, 1978, 56).

The third class of social and economic variables affecting residential satisfaction are those related to the characteristics of the resident population. In spite of its importance to attachment and interaction (discussed in other sections of this chapter), homogeneity of the population as it relates to satisfaction has received surprisingly little attention in the literature. Only three studies (Coleman, 1978, 10-16; Zehner, 1971, 383; Galster and Hesser, 1981, 746) mention homogeneity as a factor. It should be noted, however, that most residents of neighbourhoods, particularly suburban ones, are relatively homogeneous in their characteristics in any case, and that the prospective residents' self-selection process reinforces the developers' and planners' efforts in this regard. Gans' work relating resident homogeneity to high degrees of social interaction (1961, 136-138) has an indirect connection to this discussion since there is a relationship between sense of control and social interaction levels.

Some studies have related specific characteristics to levels of satisfaction, however, overall satisfaction has been shown to be highest in the upper and middle classes, since residents' aspirations are being met (Coleman, 1978, 30). At the macro-neighbourhood level, Marans and Rodgers favored no relation between satisfaction and income, though at the micro-level, those with high incomes were more satisfied (1975, 327, 335). The same study showed those with lower education levels were more satisfied at
the macro level, though results at the smaller scale were insignificant (1975, 335, 327). Francescato (1975a, 157) suggested that the results his study obtained relating a higher level of education to higher overall satisfaction could be accounted for by the concentration of that group in newer and better maintained housing. Younger adults and adolescent residents have been shown to be least satisfied with the neighbourhood as a whole and the older residents (45+) tended to be highly satisfied (Marans and Rodgers, 1975, 327, 335). Norcross found a similar result in his study of townhouse projects, and suggested that they may be due to the younger residents viewing the housing form as an interim step in the attainment of goals (1973, 10). Stage in life cycle has also been investigated for its influence on satisfaction. Becker (1974, 28) found that although overall levels were high, families and married couples without children rated the high density housing projects he surveyed less favorably than other residents. Marans and Rodgers (1975, 339) discovered in studying medium density planned suburbs that at the micro-neighbourhood level, married couples with children under six were most satisfied; at the macro-level, older marrieds and couples with children rated higher (1975, 327). Length of residence was found to be positively associated with high levels of satisfaction (1975, 327), likely because those who dislike an area would have a tendency to leave it. In spite of the results of all these American studies, the British study reviewed found that none of these characteristics had any significant relationships with residential satisfaction (1972, 26). Francescato concludes that since satisfaction levels vary so much between education levels, ages and sexes, housing must be matched to the needs of the prospective residents (1975a, 157). This can probably
best be achieved through close cooperation between building designers and developers, who should have a clear idea of their intended market. The municipality should be involved to assure that all sectors of the population have their needs met in the housing supply.

In concluding the discussion of variables affecting residential satisfaction, it is interesting to note the comment made by Clare Cooper that when people are asked to mention their "likes", they are more likely to refer to people; when they refer to "dislikes", it is more usual for physical features, especially the spaces between the buildings, which are mentioned (1975, 198-199). In preparing the evaluation for Terra Losa, then, it will be necessary to ask residents for both positive and negative opinions in order to avoid bias, and for opinions on "spaces" as well as "structures".

Some of the studies proposed predictors of the existence of residential satisfaction. Marans, Lansing and Zehner suggested that level of maintenance will most closely indicate satisfaction levels (1970, 132). Francescato (1975b, 8) identified different predictors for different types of housing: for high rise, management, privacy from neighbours, safety and security are mentioned; for low rise, management is considered important. Perhaps the most common and universally applicable measure, however, is the willingness of residents to continue living in a place (Sanofff and Sawhney, 1972, Kasarda and Janowitz, 1974, 33; Coleman, 1978, 7-8).

**Sense of Control**

The sense of control to be discussed in this section is closely related to the "sense of belonging" described elsewhere in this Chapter. Rather than indicating attachment, however, it can be described as a proprietary
attitude toward the neighbourhood which results in individuals either feeling as if they do or do not belong in the area and that the area does or does not belong to them (Fitzhugh and Anderson, 1980, 2). The "sense of control" is composed of two parts: the psychological attitude, which is proprietary in nature, and the object of that attitude, the physical area or territory it is displayed toward. The attitude is therefore analogous to what has been termed "territoriality".

A number of complex definitions of territoriality, some rooted in studies of animal behavior, have been derived (Altman, 1975, 105) but Edney (1976, 33) has described the concept simply as the continuous association of person(s) with a specific place. Altman suggests that:

Territorial behavior is a self/other boundary regulation mechanism that involves personalization of or marketing of a place or object, and communication that it is "owned" by a person or group. (1975, 107)

It is a social control mechanism and a behavioural organizer as well as a property defense mechanism (Altman, 1975, 108; Edney, 1976, 31). Territoriality plays a stabilizing and regulatory role at several levels of interaction (personal, group and community) and in several ways by providing cues for behavior and making status and roles explicit (Altman, 1975, 138).

Becker (1975, 5) sees territoriality as maximizing an individual's or group's "freedom of choice", especially in controlling "access into and activities within a specific micro-environment." Brower suggests that since territoriality deals with "behavior that directly affects the security and maintenance of the physical environment" (1980, 183), it should be of concern to planners.

To take the notion of control one step further, Altman (1975, 105) sees
territoriality as the 'means towards the end' of privacy, which he defines as "selective control of access to the self or one's group" (1976, 8). Privacy is a group-preserving function, through which continued involvement with others can be tolerated and continued (Schwartz, 1972, 153-154). The degree of privacy sought varies with the people, the task, and the time span involved (Altman, 1976, 8). The same author (1976, 24-25) has identified three functions of privacy: the regulation of interaction in the social environment to provide social and personal definition, control of the interface between the self and the world to allow absorption and growth, and the protection of self-identity, self-respect and dignity.

Research has identified three types of territory (Altman, 1975, 111-129) distinguished by the degree of control and use by occupants, and the relative duration of the users' claims. The primary territory, which is owned by individuals or groups, is clearly identified by others as belonging to those owners. Control is relatively permanent, highly valued and very powerful. Lack of a sustained primary territory can lead to lack of self-esteem and identity, and personalization should be permitted.

Secondary territories are of two types. The "home" territory is one in which "regular users have relatively free access and some control over others' use of the place" (Altman, 1975, 114). The "interactional" territory is where social interaction takes place and again there are habitual users and opportunities for use by others. It is in these spaces that the most confusion over jurisdiction and responsibility occur, and where conflicts resulting from this confusion can take place.

"Public" territory is held only temporarily, and there is almost complete freedom of access and occupancy rights.
Madge (in Skaburskis, 1974, 41) suggests that the neighbourhood is a transition zone which provides for geographic links between neighbours but yet is a safe transition space between the wholly public and the private lives of its residents.

The theoretical literature on control, territoriality and privacy can be approached from three points of view: from that of the individual (or psychologically), of the group (sociologically) and of the environment (physically). Figure 3 illustrates the relationship between control and the factors which influence it.

On a personal level, these concepts are most clearly indicative of the human need for security, for a 'safe haven', and for a sense of belonging (Altman, 1975, 13; Marcus and Hogue, 1976, 37-39). Rainwater suggests that as the individual's confidence in security within the home is assured, he begins to extend the "area of safety" further afield (1973, 104) which allows for interaction with others and development of a social network. As an aside, Beck (1977, 9) found that personal security was not as significant a concern in Canada as in the U.S.

At the larger group scale (in this case, based on the neighbourhood), territoriality has been suggested as a method of increasing group cohesion through development of a "sense of a common cause" engendered by the responsibility for surveillance of common territory (Rainwater, 1973, 104) and its defense from intrusion. Wellman (1973, 13) found that even those for whom the neighbourhood has few ties will maintain a minimal level of involvement to ensure a minimum level of social control. The simple sharing of space, and a concern for that space, has been suggested as a basis for a loose association which may be the beginning of more extensive bonding (Edney, 1976, 37).
FIGURE 3 - DESCRIPTIVE MODEL - FACTORS AFFECTING AND INDICATORS OF "SENSE OF CONTROL"
In this system, the individual is perceived as having certain rights or control, including those of access, of (limited) freedom of action and behavior, and of the ability to resist the approaches of others, when on his own ground (Edney, 1976, 38-39). When the group to which the individual belongs recognizes these rights, a structure has been established around which the group's interactions and standards of behavior can be organized (Edney, 1976, 43; Galster and Hesser, 1981, 239; Becker, 1975, 23).

Territoriality is evidenced in the physical environment by means of markers which are intended to both prevent intrusion and to be a reaction to intrusion. Barriers need not be physical in nature - they can be verbal and non-verbal symbols as well (Altman, 1975, 123) - but they all are intended to affect others' physical behaviors. Most markers are not barriers to movement but rather are symbols which emphasize that the space marked belongs to someone (Becker, 1975, 18). Personalization is one method of marking territory, particularly in multiple housing projects where the built environment does not provide a great deal of variety. Other markers are fences, hedges, placement of personal possessions (e.g. bicycles on the lawn, cars in the driveway), and signs. Brower (1980, 189) points out, however, that signs of occupancy of a territory must continually be used and maintained if they are to be convincing.

Personalization allows a physical expression of attitudes, values and lifestyle without a more direct contact with neighbours. In particular, a concern about the environment evidenced by maintenance of a property, when shared by neighbours, can be the basis of the neighbourhood's social norms and incentive for more intensive social involvement (Becker, 1975, 22-23).
The results of case studies investigating the sense of control and its component parts in neighborhood and housing projects may be helpful in the evaluation of Terra Losa and so are presented below.

As has been discussed above, territorial defense can be manifested in a high standard of maintenance of property (Galster and Hesser, 1981, 238-9). It has been found that well-maintained and especially personalized space deters vandals and criminals, reduces management costs and increases security at minimum costs (Becker, 1975, 23) while expressing control over, and pride in, the environment. Personalization is also an indication of the existence of residential satisfaction, and a sense of security (Fitzhugh and Anderson, 1980, 1).

Beck (1977, 9) has suggested that the lack of clear definition of responsibility for private and public spaces is one cause of maintenance problems. Skaburskis (1974, 41) points out that complaints about lack of privacy may be more the result of inadequate definition of spaces than actual lack of space. Ambiguity of spaces has been suggested as the cause of residents' feelings of insecurity in 'no-man's lands', since there is no territorial defense, control, or surveillance (Becker, 1975, 20).

Studies of the reactions to intrusion are of interest also. Residents are apparently unwilling to challenge intruders (or those perceived as intruders) unless the boundaries of the territory to be defended are well-defined. The willingness to challenge and defend depends on the number of neighbours known (perceived and actual numbers), as well as the depth of that friendship - in other words, moral support that could be expected (Becker, 1975, 20-22). Altman (1975, 133) found that residents are willing to defend neighbours' space if asked to do so. In a small study of
territorial defense mechanisms, Edney (1972) found that there is a significant relationship between defense and length of residence, and an even stronger one between defense and length of expected future residence. The study did not, however, provide enough detail to determine the way in which the scale and value of this defensive reaction changed over time.

Regarding feelings of security, Becker (1975, 18) found that people's perceptions of their safety are often more important than the reality (a similar result will be discussed later in Chapter Four, relating to the perception of crime). The same author found a negative correlation between having "no good friends" in the area and feeling "very secure" (1975, 22). Weideman and Anderson also found that people felt safer if they had friends nearby and if the area was well maintained. Conversely, perception of a large number of people as strangers increased insecurity (1982, 717-718).

The role of physical design in achieving a sense of control was dealt with quite extensively in the literature. Some of these observations were made as the result of case studies; others were based on theoretical discussions. Clear definition of spaces and the responsibilities for them was urged repeatedly (Skaburskis, 1974, 43; Cooper, 1975, 199; Weideman and Anderson, 1982, 721). Control (and limitation) of non-resident activity and through-traffic in the area was stressed (Lansing, Marans and Zehner, 1970, 111; Cooper, 1975, 199; Marcus and Hogue, 1976, 38; Weideman and Anderson, 1982, 721). Increasing the opportunities for social interaction and community involvement through design was probably the most widely recommended solution, and it is seen as the 'next step' beyond the defensible space concept (Becker, 1975, 22; Weideman and Anderson, 1982, 719, 721; Skaburskis, 1974, 43; Lansing, Marans and Zehner, 1970, 116; Marcus and Hogue, 1976, 39-40; Brower, 1980, 192; Budgen, 1983, 10).
Sense of Belonging

A "sense of belonging" is defined here as the feeling of attachment its residents have for a neighbourhood, and their cohesion and solidarity as a group which results. Sanoff and Sawnhey (1972, 13-8-6) have described this phenomena as the residents' "...perception of social cohesiveness in a given area and the mutual concern of residents for each others' welfare". It has been hypothesized that individuals' commitments to their neighbourhoods and neighbours has two forms, social involvement and subjective feeling, which can take several forms and which may vary according to the needs, opportunities and resources of the individual, and to the place in which they live. Further examination of the level of residents' commitments can be approached from both the psychological and the sociological points of view (Gerson, 1977, 139-140).

Several researchers have argued that the possession of local ties are essential for an individual's well-being. Hayward (1977, 12-13) states that the home is an expression of an individual's self-identity and is a special setting where one makes commitments to relationships. He states that it is not only the house itself which influences this perception, but also the people and the community life of the neighbourhood in which it is located. Galster and Hesser agree that the neighbourhood is viewed as an extension of one's home in cases where an attachment is present (1982, 239). Cooper (1977, 3-4) states that the house is the "symbol of self" for its inhabitants. Depending on the individual's perception of the world (including the neighbourhood) as a hostile, threatening environment or as stable and attractive, the home can be seen by that individual as either a fortress for the defence of "self", or as a means of self-expression.
Different people have different needs, desires for, and perceptions of their neighbourhood and their neighbourly relations, based on their individual personality types, lifestyles, life stages and so on. This topic is considered in greater detail in Chapter Four in dealing with residents' characteristics.

From a sociological perspective, the degree of attachment is based on the types and intensity of social relationships which an individual associates with a place. The physical setting becomes less important over time, except as an organizer, as other social factors come into play (Gerson et al, 1977, 140). Smith (1970, 144) states that attachment engenders a feeling of solidarity among neighbours, which in turn becomes a social control mechanism. Galster and Hesser (1982, 239-240) conclude that the stronger the cohesiveness, the greater the desire to conform to the "minimum acceptable" standards of the neighbourhood. Greater neighbourhood attachment leads to increased sensitivity to conformity, and a desire to increase the "neighbourhood good".

If "sense of belonging" or commitment is viewed as a dependent variable, there are several factors which, research shows, affect its existence and its strength (see Figure 4).

From the body of literature examined, the majority of the research undertaken has found that the length of residence in the neighbourhood is a major factor in the development of neighbourhood attachments (Kasarda and Janowitz, 1974, 334; Biegel et al, 1980, 117; Gerson et al, 1977, 156). Most researchers agree, however, that length of residence by itself is insufficient reason to develop an attachment to place. More often it is the people in that place and the relationships (especially voluntary ones)
FIGURE 4 - DESCRIPTIVE MODEL - FACTORS AFFECTING AND INDICATORS OF "SENSE OF BELONGING"
which the individual has with them that creates the attachment, and may even lead to long-term residence. On the other hand, long-term residence may increase the intensity of relationships, as well (Kasarda and Janowitz, 1974, 335-336; Gerson, 1977, 148, 156; Biegel, 1980, 119).

Other factors are less important in explaining neighbourhood attachments. Life stage is important, as those with children have more local involvement. Older people (probably because of length of residence and reduced area of operation) and children (probably because of lack of other opportunities and experience and localized need and ties) tend to be more attached to their neighbourhoods (Gerson, 1977, 147, 156). The physical features of the place are likewise significant. Single family housing forms, with their attached "territories", evoke a stronger sense of attachment (which as explained above extends to the neighbourhood) (Gerson, 1977, 149), than do high rise apartments, which are generally perceived as less-than-the-ideal and as interim homes only (Cooper, 1977, 2; Michelson, 1969, 20). Ownership, together with length of residence, has been found to be highly correlated to existence of a sense of belonging (Biegel, 1980, 115).

Finally, the manner in which attachment has been found to be evidenced by residents in past research is worthy of note, since their appearance in Terra Losa may give an indication of the effectiveness of the neighbourhood planning. Smith (1970, 145-147) has suggested five kinds of evidence of neighbourhood attachment:

1) Most typically, the number and location of friends, the frequency of contact and the content of interactions of residents will indicate to what degree their social relationships are within the neighbourhood.
2) The intensity of use of physical facilities reflects to orientation of local residents to an area.

3) Psychological cohesion, or the personal identification of an individual with an area and its residents, is evidenced by: the friendliness of, and towards, others; the expression of "liking" an area, the satisfaction with the residential environment; and the recognition of the area's name and boundaries.

4) Related to social interaction as well, Smith found that the frequency of a positive perception of neighbours may be greater than that of actual physical contacts with them.

5) Investigation of the degree of consensus among neighbours of acceptable values and behaviors, in the roles and operations of local institutions, and in levels of maintenance, noise, borrowing and the like, can give a more complete picture of the residents' attitudes towards their neighbourhoods.

Other authors have suggested evidence of cohesion. Informal social participation (but not involvement in local formal organizations) is considered an indication of a sense of belonging (Kasarda and Janowitz, 1974, 336). Expressions of individuality, especially on the exterior of dwellings (Brower, 1980, 193), indicates a desire for self-expression using the dwelling as a symbol of self (Cooper, 1977, 2). The level of neighbourhood solidarity has been shown to be related to a lack of desire to relocate (Sanoff and Sawhney, 1972, 13-8-6). Finally, one might assume that a similarly high standard of maintenance in the neighbourhood (or a sub-unit), together with evidence of imitation of neighbours, might result from the cohesiveness described by Galster and Hesser above.
Social Interaction

Neighbourhoods are composed of two aspects: the physical environment, and the social community. This section will examine the latter. Specifically, the theories regarding the kinds of relationships that exist and how they develop will be presented, followed by the results of case studies identifying the factors which affect the social community and the physical patterns of interaction which occur in urban neighbourhoods.

Four kinds of social relationships have been identified in neighbourhood situations.

The first, that of the neighbour, involves those persons living close by. Neighbours are helpers in time of need, and a source of casual sociability and information (Keller, 1968, 152) but the relationship may go no deeper than that. Ties between neighbours are based on the tradition of reciprocal obligation rather than emotional feelings or liking. Heberle (1960, 7) suggests that because of the greater independence of households today, most ties between neighbours are voluntary rather than obligatory. Smith (1970, 146) describes a concept called "latent neighbouring" in which there is a predisposition to help neighbours in time of need, but little other contact. Shulman (1967, 53-54) identified two other attitudes toward neighbouring in his Canadian study: "manifest neighbouring" which involves frequent contact and mutual aid, and relationships almost like an extended family; and "privacy oriented" in which there was minimal interaction and neutral feelings towards neighbours. The majority of the population surveyed displayed the "latent neighbouring" attitude (55%) while "privacy oriented" individuals comprised only 15%.

Friendships within a neighbourhood are generally considered to be more
intense and intimate, longer-lasting and based on a more widely shared interest than simply living close together.

Interaction can occur not only between individuals, as above, but also between individuals and various groups. Generally these are considered to be of two types: the informal group in which membership is voluntary and the organization is loose; and the formal organization, which requires some form of commitment to membership and which is more rigidly structured. An example of the former would be a group which gathers to play tennis, and a church group or fraternal organization would be one kind of the latter.

Regarding the manner in which social relationships are formed in the neighbourhood, Festinger (1950, 34-35) postulated that friendships (in which he included both neighbouring and friendships) were formed as a result of proximity and the "passive contacts" occurring between those living close together. Proximity was determined on the basis of physical distance, an also of "functional distance" - the "positional relationships and features of design" which encouraged passive contacts.

Gans and others disagreed with this determinist explanation. They suggested that though propinquity is important as an initiator of neighbouring and for the maintenance of less intense relationships such as latent neighbouring, it is not strong enough to be the sole basis for more intense relationships (Gans, 1961, 135). Schorr (1970, 720) suggests that in the short-term contacts are made through proximity, but in the longer run contacts through organizations and workplace are the predominant bases for relationships. This concept is expanded further by Wellman (1973, 2-3) and Litwak (1970, 585) who state that with improved communication, greater residential mobility, and less dependence on neighbours for mutual aid,
ties are now more likely to be spatially diffuse and the reliance on the local neighbourhood as the areal base for interaction may be obsolete.

If an explanatory model of neighbourhood relationships is set up with social interaction as the dependent variable, the literature can provide a large number of independent variables by which it is affected (see Figure 5).

Perhaps the most widely-accepted influence on the degree of social interaction is the homogeneity of the resident population. Gans was one of the first to point out that it is important, and especially so at the micro-neighbourhood scale. He suggests that homogeneity of the population promotes greater involvement in the social life of the neighbourhood since it also means that it is likely that people with similar interest, values and attitudes will be located near each other. He also states that homogeneity increases the perception of friendliness in the neighbourhood (Gans, 1961, 136-138). Carey and Mapes (1972, 79) have suggested that in its initial stages, social interaction is dependent on the outwardly-visible signs of perceived compatibility rather than any psychological similarity. Other studies (Zehner, 1972, 176; Keller, 1978, 8; Michelson, 1970, 184-185) found that perceived similarity of interest is very important to both residential satisfaction and interaction, especially in the middle and upper class. In a study of a heterogeneous multiple housing project, it was found that friendships did form on the basis of similarity and propinquity, but the greater the distance, the more friendships needed additional similarities in social class to be maintained (Athanasiou and Yoshioka, 1973, 61).
FIGURE 5 - DESCRIPTIVE MODEL - FACTORS AFFECTING SOCIAL INTERACTION

most influential factor
In relation to specific characteristics of the population, the following results have been found. Residents with education above high school levels are found to have a greater number of friends (Biegel, 1980, 118) especially at a distance (Athanasiou and Yoshioka, 1973, 55). Gans also saw education level as an important variable, with income and life cycle stage, in neighbouring activity (1961, 137). Several studies (Yancey, 1972, 127; Fried and Gleicher, 1972, 147) found that friends among the middle class were more dispersed than among the working class. Young adults, adolescents and children have been found to interact more than elderly people (Biegel, 1980, 116) and children often serve as catalysts for bringing adults together (Michelson, 1970, 180; Carey and Mapes, 1972, 51; Great Britain, Dept. of Environment, 1972, 62; Wellman, 1973, 12; Fischer and Jackson, 1976, 294). Several studies have found that working in the neighbourhood is closely related to involvement in the neighbourhood and neighbouring activity (Martin, 1956, 448-449; Lee, 1968, 260). It has also been shown that the degree and type of neighbouring is significantly influenced by the degree of self-sufficiency of an individual or household. If the resident is highly autonomous, neighbouring activity is very selective and voluntary (Keller, 1968, 156; Heberle, 1960, 9; Gerson, 1977, 156). The tendency to autonomy increases with urbanization and mobility (Keller, 1968, 156; Zito, 1974, 262). People also differ in their natural propensity to neighbour (as discussed elsewhere in Chapter Four, and Great Britain, Dept. of Environment, 1972, 62), and in some cases life style chosen does not require the mutual aid offered by neighbours (Zito, 1974, 262; Michelson, 1970, 189). Type of tenure has been variously shown to affect neighbouring, with owners interacting more than renters (Biegel,
1980, 116), and not affecting interaction (Caplow and Forman, 1950, 360; Michelson, 1969, 18).

Finally, length of residence in a neighbourhood has been shown to increase participation (Michelson, 1969, 2; Litwak, 1970, 594; Kasarda and Janowitz, 1974, 334) though it has been suggested that the number, rather than the intensity, of ties increases with time (Caplow and Forman, 1950, 362). It has been suggested that residential mobility impedes the formation of social ties (Heberle, 1960, 7) and makes it less likely that the local neighbourhood is the major community in which an individual is involved (Wellman, 1973, 12). The opposite view has been taken, however, by Kasarda and Janowitz (1974, 329) who suggest that highly mobile, advanced industrial societies have neighbourhoods of "limited liability" in which:

"people participate extensively in local institutions and develop community attachments yet (are) prepared to leave these communities if local conditions fail to satisfy their immediate needs or aspirations."

Studies have shown similarities in the way that residents are integrated into the neighbourhood. Immediately following the move into the neighbourhood the family is wound up in itself and its problems. Once immediate problems are settled, families become involved in the neighbourhood to a certain low level very quickly. A period of stability follows, lasting about five years, after which involvement increases again (Lee, 1968, 259; Litwak, 1970, 590).

A number of authors have suggested, to varying degrees, that design can influence social interaction, and these influences have been summarized into three main types. First, a plan controls the physical distance between residents (Festinger, 1951, 156; Gans, 1961, 135; Schorr, 1970,
Keller (1969, 80) suggests that physical layout is only important if the population is homogeneous, supporting Gans' argument that though propinquity may initiate contact, homogeneity maintains it (1961, 135). Michelson (1970, 186) agrees that a "strong and continued need" is necessary for physical determination of the functional distance between residents. This can also be termed orientation. It is widely recognized as significant in forming contacts, as shall be discussed later in this section (Festinger, 1951, 156; Keller, 1968, 74-75; Rosow, 1961, 131; Gans, 1961, 135; Schorr, 1970, 720; Gutman, 1966, 106).

Third, the design can either enhance potential for communication and interaction (such as common facilities and amenities) (Cooper, 1974, 32; Gutman, 1966, 108; Keller, 1968, 78) or create barriers to it (such as roads, walls, etc.) (Gutman, 1966, 108; Cooper, 1974, 31).

On a more detailed level of design, dwelling unit type has been investigated as a determinant of interaction. House dwellers have been found to have more localized contacts (Fischer and Jackson, 1976, 293) than apartment dwellers. Zito (1974, 249-261) in studying New York high rise residents, found that though there was limited neighbouring activity, few friendships were formed and socializing was done elsewhere. There was little evidence of informal gatherings. The lack of friendships was explained by the residents' desire for privacy, freedom, and lack of obligation, and by lifestyles which precluded maintenance of close friendships. Michelson (1977, 173) determined that apartment dwellers' friends were generally not neighbours, though their perceptions of neighbours were generally positive.
Finally, density has been seen by some to have an effect on social interaction. Baldassare (1977, 109) suggests that in high density situations, the number of contacts between residents is increased, so people are more selective of which ones will be maintained and which ones limited.

Having looked at some determinants of interaction, attention will now be turned to the significant physical patterns of interaction which commonly occur in neighbourhoods, as evidenced in the literature.

With respect to orientation of structures, interaction seemed to occur when visual contact could be made and maintained. Kuper found that in semi-detached units party-wall neighbours did not interact as much as those on the other side of units, where windows were located. Merton found placement of doors to be important, and Whyte, steps, lawns, and driveways as well (Michelson, 1970, 175-176, 180). Gans (1961, 158) found that the hundred-foot rear yards in Levittown discouraged back-to-back neighbourly contact. In linear layouts of ground-oriented units, it has been noted that whether neighbours have more contact side-to-side than across the street depends on orientation of interior rooms (e.g. if the living room is at the front and is not well used - not looked out from often) and doors (Kuper, 1953, 155-156; Rosow, 1961, 131) and whether or not the roadway presents a barrier (Cooper, 1975, 33). Rows of units were found to be conducive to chance meetings but not sustained contacts (Cooper, 1975, 30). The middle units of rows were more interactive than those at the ends, especially if the end units are oriented differently (Whyte in Michelson, 1970; Kuper, 1953, 157). Cul de sac arrangements were found to increase casual interaction (Lansing, Marans and Zehner, 1970, 116). Gans pointed
out that a large "court" arrangement usually resulted in several small
groups forming, as opposed to a single group if the "court" were small
(1961, 138). The importance of formation of small groups has also been
pointed out by Festinger (1951, 159) and Lee (1968, 164). With respect to
apartment dwellers, Zito (1974, 258) found that side-by-side neighbours
interacted less than those across the hall, because visual contact was
less.

It has been found that residents of ground-oriented, single family
housing forms meet outside their residences, usually from their semi-
private spaces such as porches, yards or driveways (Michelson, 1969, 9;
Marcus and Hogue, 1976, 39). In multiple housing forms, contacts usually
take place indoors (Marcus and Hogue, 1976, 39). Semi-public outdoor areas
such as parking lots, courts or foot paths can also become the centers of
friendship patterns for the small neighbouring groups (Cooper, 1975, 32).
In high rises, contact is usually made between (or within) semi-public
spaces (Becker, 1974, 184) such as access areas, the laundry, or shops
(Great Britain, Dept. of Environment, 1972, 62), and in low rise, between
semi-private and public spaces (Becker, 1974, 184). Apparently the sharing
of open space by multiple housing residents can lead to the same kind of
frustration about lack of privacy as do party walls (Michelson, 1969,
17-18).

Summary

Chapter Three has outlined four major topics typically investigated in
the evaluation of neighbourhoods and discusses both the relevance of each
topic to such evaluations, and the results which might be expected, based
on the findings of other studies.
It will have been obvious from the discussion in this Chapter that each topic both affects and is affected by the others. The relationship between them is portrayed schematically in Figure 6, which also attempts to show the relative potential for influence which design features have on the major topics. The latter will be discussed further in Chapter Five.

The summary conclusion of this literature review is that design has the greatest influence on residents' satisfaction, second-most on residents' sense of control over their environment, third on social interaction, and least on residents' sense of belonging.
NOTE: THICKNESS OF ARROW BETWEEN "DESIGN" AND MAJOR TOPIC INDICATES THE RELATIVE POTENTIAL FOR INFLUENCE OF DESIGN ON THAT TOPIC. ALL OTHER ARROWS SHOW EXISTENCE OF AN INFLUENCE ONLY.

FIGURE 6 - INTERRELATIONSHIPS OF MAJOR TOPICS AND RELATIVE POTENTIAL FOR INFLUENCE OF DESIGN
CHAPTER FOUR

OTHER CONSIDERATIONS

Both the literature and the specific situation being studied have suggested other matters which are worthy of consideration, in addition to the major topics discussed in Chapter Three.

The first group of factors are the characteristics of the resident population of the Neighbourhood, seen by many writers as an important influence on the major topics discussed in Chapter Three. It is recognized that, to some extent, the residents of the Neighbourhood are influenced by the marketing strategy of the developers, and that self-selection will also play a part in determining the resident population so that the variation within the range of characteristics may not be as wide as in less-planned areas.

The second group of factors considered in this chapter are those particular to the Terra Losa Neighbourhood and its situation. For the most part, these factors have received less attention in the literature, especially from the point of view of plan evaluation.

Characteristics of the Residential Population

There are certain characteristics of residential populations which are identified time and again in the case studies discussed elsewhere in this thesis as having significant effects on the levels of neighbourhood satisfaction experienced. This section will identify those considered essential for inclusion in the evaluative survey.

As with most social science studies, demographic information is the most common basis of analysis. Age, sex and household characteristics of the residents have usually been collected.
Likewise, socio-economic characteristics such as education level, income, occupation and employment status have been described and are used to determine the "social status" or "class" of the residents.

Collectively, this information is used to ascertain the degree of homogeneity (or similarity) of a residential population, which the literature review has revealed has been shown to be a major determinant of interaction, satisfaction and attachment.

Less commonly, the psychological characteristics of residents have been used (or suggested for use) as a basis for a "higher level" of homogeneity (Kuper, 1953, 162; Keller, 1968, 81; Zito, 1974, 262, for example). Some authors have postulated that while some people tend to be social and highly interactive, others tend to be (by choice) more solitary or reserved. This propensity to "neighbour" can have an effect on the results obtained in any study of the neighbourhood. In order that the results it affects are not misconstrued, the degree of its effect should be determined.

Homogeneity in attitudes, values, perceptions and beliefs have been found useful in some studies (for example Galster and Hesser, 1982, 239; Smith, 1970, 147; Kuper, 1953; Athanasiou and Yoshioka, 1973; Marans, Lansing and Zehner, 1970, 125). The information collected has varied from that which is neighbourhood-based (for example, acceptable borrowing habits, or what constitutes a "good" neighbour) to subjects of a more general nature (attitudes toward and importance of the larger community, politics, religion, and in the U.S., race relations). People's perceptions can actually be more important determinants of their satisfactions and behaviors than reality. For example, perception of friendliness of neighbours is more important to satisfaction than a high number of actual
contacts with them (Becker, 1974, 187; Heberle, 1960, 3; Zehner, 1972, 176).

Information on other variables can be collected to further explain the responses received. Tenure type has been used in some case studies, though in many cases (e.g. Festinger, 1950; Gans, 1967; and Cooper, 1975) the projects studied had no variation in type of tenure available. Since Terra Losa is expected to have a mix of tenure types, evaluation results can be tested to determine whether satisfaction levels vary at all with tenure type.

Residential history of the resident has been found to have some effects on levels of satisfaction with present accommodation (Francescatto, 1975b, 8). Information regarding last housing type lived in, satisfaction with it, tenure type and length of residence in previous residences have been used as bases for analysis. Determination of the mobility of residents is also important in accounting for levels of satisfaction (e.g. Kasarda and Janowitz, 1974, 333; Beigel, 1980, 115). Data needed for this type of investigation include the resident's expectations regarding future moves (both when, and to what type of unit in what type of neighbourhood), and actual length of tenure in present accommodation. This latter has been shown to have significant effects on attachment and types and numbers of social interactions and attachments (e.g. Litwak, 1970, 585; Wellman, 1973, 27; Caplow and Forman, 1950, 260; Schorr, 1970, 714).

Though not, strictly speaking, a characteristic of the resident, housing type presently occupied is an important attribute which may affect a respondent's perceptions, attitudes and behaviors. Recording of this information would allow the identification of any differences in
satisfaction by housing type. The manner in which categories of unit types are set up in the eventual survey would depend on the level of detail the Planning Department is interested in, or has the time and money to achieve. At the minimum, the classes should be single family forms (duplex, townhouse), low rise apartments (stacked rowhousing and apartments up to four floors), and high rise apartments (more than four floors).

In order to discover the degree of interaction within the Neighbourhood, and the degree to which the Neighbourhood comprises the environment for individuals' relationships, information on the respondents' involvement with others must be recorded. In general, data has been collected on friendship types (friends, neighbours, or acquaintances), frequency of contacts, location of those contacts, location of residences of these friends/acquaintances, content of contacts (pleasantries vs. meaningful conversation), duration of contacts (length of individual contacts as well as overall length of time of "knowing" the person), whether or not the person was known before or after moving to the Neighbourhood, and the manner in which they first met. All social contacts, whether or not they live in the Neighbourhood, should be included. (Rather than obtaining very detailed information on each contact, often only generalized proportions are asked for - for example, "What proportion of the people you know would you consider as friends/acquaintances/neighbours?"). Though in many cases studied kinship was heavily investigated as a type of social contact, it is felt that this type of bond would not be a significant factor in a new community, surrounded by new communities, whose target market is predominantly young and middle class. Kinship tends to have greater effects on interaction in lower class and well established neighbourhoods (Yancey,
1972, 127; Fried and Gleicher, 1972, 145; Coleman, 1978, 20-21). Therefore, kinship relationships should be noted, but are treated no differently from other forms of friendship or neighbourly relationships.

Finally, the resident's affiliations with formal and informal organizations are important in ascertaining the importance of the neighbourhood in his social network (e.g. Biegel, 1980, 112, 119; Gerson, 1977, 154; Kasarda and Janowitz, 1974, 335). A preponderance of memberships in neighbourhood organizations would indicate a localized interest; city- or larger-scale organizations reflect a more cosmopolitan base of operations. As well, these results can help test the effectiveness of the Community Centre as a focus for the Neighbourhood. The propensity of the residents to be involved in such organizations must be considered in conjunction with their behavioral pattern. The effects on the self-selection process of residents of the marketing strategy, which is to emphasize high expectations for both formal and informal interaction should also be investigated.

Other Questions

This section will discuss several topics which are less commonly included (or less fully explored) in the neighbourhood evaluation case studies found in the literature. Because of the goals and design objectives identified for Terra Losa, however, it is suggested that they, together with some site-specific questions, be included in the evaluation of the neighbourhood.

DENSITY AND CROWDING

As was described in Chapter Two, the approval of the Terra Losa plan at a density of approximately 75 persons per acre was a drastic departure from
the densities approved in "typical" suburban neighbourhoods, and it was not undertaken without considerable hesitation and doubt on the part of both the Planning Department and City Council. One essential function of the evaluation would be to determine whether or not the residents of the Neighbourhood are in any serious way affected by its high density, how they are affected, and to what degree.

There is a considerable body of literature dealing specifically with the question of residential density, and most of it begins with a careful distinction (not always made in evaluative literature) between density and crowding. Density is a physical quality or measure (Altman, 1975, 150; Schmidt et al, 1979, 106) while crowding is a perception, a "personal subjective reaction" and a feeling of too little space (Schmidt et al, 1979, 106; Altman, 1975, 150) of which density is only one component. Altman suggests that other factors affecting the perception of crowding are an excess of stimulation, and the breakdown of mechanisms which preserve the individual's desired level of privacy (1975, 151). In other words, people who perceive crowding have lost their sense of control over their contacts and their territory (Freedman, 1975, 123-124). Freedman suggests that crowding intensifies typical reactions to situations (1975, 90) so that they may become overwhelming (1975, 123). Therefore, though density is a contributing factor, if the interest is in examining the effects of the plan of Terra Losa on its residents, it is really the crowding phenomena which should be investigated.

Factors which have been found to affect the perception of crowding in other areas should also be examined in the Terra Losa evaluation. Schmidt et al (1979, 119-120) has derived six scales significant in the perception
of neighbourhood crowding: traffic in the city, crowding in the city, perceived changes in the neighbourhood since moving in, the attainment of privacy, the importance of unit and yard space in the choice of residence, and crowding in shopping areas. Physical measures significant in perception of crowding were the distances from residence to commercial and industrial activities, to parks, to major roads, and to freeways. The same study found that insofar as it limits behavioral freedom and control, density affects crowding (1979, 106-107). Loring and Schmidt both suggest that perception of crowding is greater and more antisocial behavior occurs when physical spaces are ambiguous and territory is ill-defined (Skaburskis, 1974, 41). Beck (1977, 9) reports that the sense of crowding is influenced by the views from unit windows, especially the heights and distances away from adjacent buildings, the number of children playing, and adequacy of community facilities. Schmidt et al (1979, 43) states that some research has found that personal characteristics such as values, attitudes, expectations, and past experience influence the residents' perceptions and evaluations of crowding.

The results of a perception of crowding are also of interest since their presence may indicate that crowding exists (though since crowding perceptions can result from causes other than physical density, care must be taken not to attribute causes where insufficient justification exists). Carson (1972, 156) discovered that residents of very low density (less than 6 units per acre) and high density (greater than 25 units per acre) areas perceived a threat of future population crowding more than those of middle density areas. The 'threats' identified with crowding were general population crowding, school crowding, playground crowding, increased low
rental accommodation, minor crime, drug problems, increased noise and traffic, and decreased open space. All of these are "visible changes that are taking place, or threatening to take place, in their immediate area" (Carson, 1972, 167). Perception of crowding can result in a greater number of complaints about the development and neighbours, reflecting the loss of privacy felt by the individual (Lansing, Marans and Zehner, 1970, 109).

Some factors of design which affect or mitigate the perception of crowding are the clear definition of territorial space types to enhance sense of control and surveillance (Skaburskis, 1974, 41; Schmidt, 1979, 128; Freedman, 1975, 123-124), design of small clusters vs. large projects (Noroross, 1973, 9; Cooper, 1975, 32), provision of visual and functional access to open space, variety in layout, minimization of noise intrusion (interior and exterior) and protection of privacy (Cooper, 1975, 32). Provision of several small spaces for interaction rather than a single large space is also suggested (Freedman, 1975, 124).

PERCEPTION OF CRIME

The determination of what are the perceptions of crime in Terra Losa, how they relate to the actual crime rate, and whether both the perception and reality differ substantially from the results obtained from other neighbourhoods (both those of "typical" densities and of high density but without any special design parameters) would allow the evaluation of Newman's concept that opportunity for crime can be reduced through design. It would be revealing to discover whether the residents perceive their Neighbourhood as 'special' in this regard, though results would be expected to depend on the marketing strategy used and length of residence.

Literature dealing with urban crime has generally supported the view
that residents' perceptions of crime is of greater psychological importance to them, and influence their behavior more, than their actual experience with crime and actual crime rates (Hartnagel, 1979, 179; Conklin, 1971, 380). One study (Hartnagel, 1979) is of particular interest since it was done in Edmonton. In general, those who felt safer in the neighbourhood were more trusting and very slightly more satisfied, but level of crime perceived did not relate to participation in social groups, local organizations or number of friends (1979, 178). There was a difference in the perception of crime and the fear of personal victimization. Though 85% of the population studied perceived an increase in crime, only 7% feared it in their neighbourhood - a result hypothesized to be insufficiently high to change behavior patterns (1979, 189). Perception and fear of crime was greatest among females, the poor, least educated and the elderly (1979, 179) though except for the first, these groups are not expected to be highly represented in Terra Losa.

RECREATION FACILITIES

A significant component of the developers' concept is the inclusion in the neighbourhood from a very early stage of a multi-purpose community center, which is intended to be a focus for community life in the Neighbourhood. It seems logical, therefore, to evaluate the performance of the center in this function. In particular, the patterns of use (what uses, when, how often, and by whom) and degree of involvement of residents and workers from Terra Losa and of non-residents should be examined. A comparison of these results with similar data on "typical" suburban neighbourhoods and high density neighbourhoods with community leagues, and other high density projects with on-site community facilities, should be made.
The literature dealing with provision and use of recreational amenities is fairly extensive. Norcross and Hysom (1968, 39-52) found that such facilities were important in attracting residents and in keeping them, but even so, they were used regularly by only a very small proportion of residents and to levels well below capacity (also Lansing, Marans and Zehner, 1970, 80; Brower and Williamson, 1974, 339; Michelson, 1977, 355). This was particularly true of apartment residents, a trend rationalized by the type of people and lifestyles involved, and their less localized distribution of friends (Homenuk, 1973, 23). This pattern of (in)activity did not, however, stop residents from feeling that more facilities were required (whether or not some already existed) (Norcross, 1973, 10; Great Britain, Dept. of Environment, 1972, 62).

Good access to the facilities (both physically and temporally) have been shown to increase the likelihood of use of facilities (Brower and Williamson, 1974, 339; Lansing, Marans and Zehner, 1970, 80, 91; Homenuk, 1974, 24; Michelson, 1969, 13).

The types of spaces which were used depended a great deal on climate. Tennis courts seem especially popular (Norcross, 1973, 10; Homenuk, 1974, 24). All-purpose recreation rooms were rarely used (Homenuk, 1974, 24; Marcus and Hogue, 1976, 40) though meeting rooms were suggested as a means of facilitating social contacts (Marcus and Hogue, 1976, 40).

A SENSE OF PLACE

"Sense of Place" has been defined as:

*the pattern of reactions that a setting stimulates in a person... a product of both features of the setting and aspects the person brings to it... an interactional concept of social and physical settings... (R)eactions... include feelings, perceptions, behaviors and outcomes associated with one's being in that location. (Steele, 1981, 12)
The marketing of Terra Losa is expected to strongly emphasize the creation of a unique entity, separate from the neighbourhoods on its boundaries, and in possession of a character of its own. This concept will be evidenced in a physical way through the fencing around and gateways leading into the Neighbourhood, and consistency in signage, building materials and roof lines.

Designers and developers can have little influence on the social context affecting the settings to which individuals react, however the physical component of the concept can be affected. Steele (1981, 184-185) suggests several criteria for creation of better physical settings:
1. provision for choice and variety;
2. reinforcement of patterns and sequences - for example gateways and successive degrees of marking of private areas;
3. provision of a sense of identity, through recurring themes in form, materials, arrangement and symbolism;
4. increased visibility of the opportunities available in a place, for example improvements in information and access;
5. provision of appropriate scale, between elements and between elements and users.

Similar qualities of a place are likely to engender a "spirit of place", which Steele defines as the "personality of a place, an attribute that draws similar reactions from different users (1981, 53).

The determination of whether the development concept has any effect, especially a lasting one, on the residents' perceptions of what comprises 'their' neighbourhood will provide an evaluation of the effectiveness of the design and marketing strategy in creating a clearly identifiable
neighbourhood unit. Chapter Three has already discussed the different scales at which residents perceive their environment - the micro and macro scales. A great deal of research has been done on the ability of residents to identify their neighbourhood's boundaries, and the congruence, or lack of it, of these boundaries to both those of others and "official" boundaries (Lee, 1968, 263; Haney and Knowles, 1978; Mann, 1970; Kasarda and Janowitz, 1974, 331; Porteous, 1977, 80-81; Steele, 1981, 60-61). Very little generalizable information has emerged from it, however, other than to say neighbourhood definition is a highly personal and subjective process, though distinct physical edges do tend to give more consistent boundary identification, and 'landmarks' aid in retention of an image of a place.

The degree of recognition of the neighbourhood name, after being highly publicized, would also reflect the effectiveness not only of the marketing strategy but also the planning designed to encourage attachment to place.

PATTERN OF WORK

Another component of the developers' concept was the desire to create a single neighbourhood in which opportunities existed for both living and working. The City of Edmonton is also interested in this concept, though perhaps not at so small a scale, since in its General Municipal Plan (Objective 6F) and its Urban Growth Strategy, the decentralization of employment areas and minimization of journey to work are promoted.

The evaluation could be used to determine whether or not this part of the concept has in fact been achieved. It could be expected, however, that this phenomena would only evolve after a considerable period of time, once both the residential area and office park are fully developed and have been
in operation for some time. Inclusion of the question might be more appropriate if the evaluation were repeated several years after its initial application.

If some residents do work in Terra Losa, it could be determined whether their satisfactions, attachments and involvement in the neighbourhood differ from those who work elsewhere. Martin (1956, 448-449) suggests all of these levels should be higher for resident workers than for residents employed elsewhere.

THE DESIGN GUIDELINES AND THE INDUSTRIAL AREA

All of this chapter to this point has dealt with evaluation of the residential portion of the Neighbourhood. Nevertheless, the Guidelines cover the entire Neighbourhood, and their effects on the office park should also be examined.

Because of their more transitory occupation of this area, the workers in it might be less observant and critical of it, though their opinions should still be obtained. It is more likely, however, that evaluation of this part of the Neighbourhood would take the form of observation and information received from police records of crime in the area. Residents' perception of the office park might also be of interest to the City, especially in considering the development of other 'mixed use' neighbourhoods and the treatment of the boundaries between the residential and industrial areas.

INVENTORY

Finally, it is suggested that open-ended questions (i.e. those not having precoded or set responses) be included to obtain from residents indications of features and design details of their environment that they
enjoy or dislike. This information would be of use to both planners and architects, and could hopefully reduce the 'mistakes' made in other plans and even enhance in some small way the quality of future residential environments.
CHAPTER FIVE

EVALUATIONS OF THE GUIDELINES AND THE PROGRAM

What has been discussed in Chapters Three and Four are basically the components of neighbourhood satisfaction, both in general and as they relate to Terra Losa specifically. Measurement of these components as they exist in the Terra Losa Neighbourhood of the future will provide an indication of the success of the neighbourhood in relation to similar data obtained elsewhere. In short, these figures will aid in measuring the degree to which the goals of the Guidelines have been achieved.

Other than the typical examination of outcomes described above, there is another type of evaluation which involves the evaluation of the implementation of a program, in this case, the Guidelines. Patton (1978, 152) describes it as being composed of several parts: "effort evaluation", or description of the quality and quantity of activity in the program (164); "process evaluation", revealing its strengths and weaknesses (165); and "treatment specification", which examines the causal assumptions made and the theory behind the actions stated (167). Though the first two of these three parts are important in providing a complete picture of the effectiveness of a program, it is clearly not possible to undertake them at this stage, since the program has not yet commenced operation. The third part, however, dealing with its theoretical basis, can be done at this stage and could provide useful direction in the application of the Guidelines or for amendments to them prior to implementation.
APPROACH FOR THE EVALUATION

Following Patton's suggestion, this Chapter will evaluate the Guidelines from the 'treatment specification' viewpoint. As he put it, "treatment specification reveals the causal assumptions undergirding program activity" (1978, 167). He further describes this approach as answering several types of questions:

What is going to happen in the program that is expected to make a difference?

How are program goals supposed to be attained?

What theory do program staff hold about what to do in order to accomplish the results they want (1978, 167)?

In practice, at least in the Terra Losa context, this means questioning at three levels the assumptions stated or implied by those who wrote the guidelines. The first level is the conceptualization of the relevant theory, on the basis, at least in part, of what is in the theoretical and empirical literature reviewed here in Chapters Three and Four. The second level focuses on the linkages between this theory and the Guidelines, and the third on the linkages between the Guidelines and their implementation in the plans as executed when the neighbourhood is developed. This last level is, of course, related to another aspect of the analysis, namely the search for the existence in the Guidelines of implementation mechanisms to bring about the desired results expressed in the goals, and an evaluation of the appropriateness of these mechanisms, based on the literature review. A descriptive model of this evaluation is shown in Figure 7.

Before undertaking this detailed evaluation, a short critique of the Defensible Space concept is necessary, since it is the basis of the Guidelines and much of the further discussion.
Next the implicit and explicit goals of the Terra Losa Design Guidelines and of the related documents and activity surrounding their origin will be identified. The evaluation of the program as described above will be done in the context of these goal statements.

CRITIQUE OF THE DEFENSIBLE SPACE CONCEPT

As stated in Chapter Two, Newman based Defensible Space on lower income, inner city American neighbourhoods and projects. He has been criticized for selective inclusion of projects to substantiate his results, for not controlling for socioeconomic characteristics and police recording methods which might bias his results, for errors in calculations, and for not establishing design as a (major) causative factor in explaining crime rates (Altman, 1975, 116). Other criticisms of the work include the validity of the assumption that those who do not "belong" in a place will comprehend the meaning of the symbolic markers used to define territories, and that the residents and criminals are two separate groups (Porteous, 1977, 299). Finally, an evaluation of a project designed on the basis of Newman's concept found no evidence of increased control or social interaction:

while the defensible space changes may well have discouraged criminals or intruders from entering the development, there was no immediate adoption of proprietary attitudes by the residents. (Chenoweth, in Fitzhugh and Anderson, 1980, 2).

One might also question the validity of the concept when applied to middle-class, suburban neighbourhoods in Canada, where the literature has revealed, there is not the degree of concern for security, or the fear of crime that is apparently experienced in the U.S.

GOAL IDENTIFICATION AND EVALUATION

To help order the analysis, the evaluation described in Figure 7 and
THEORY OF NBHD. SATISFACTION AND DEFENSIBLE SPACE

(interpretation)

GOALS ON WHICH GUIDELINES BASED

(assumptions regarding causality and expectations of originators)

GUIDELINES

(interpretation by implementors)

IMPLEMENTATION

(resident population)

ANTICIPATED RESULTS UNANTICIPATED RESULTS

NOTE: (1) Statements in brackets are the "sieves" or screens through which the previous steps pass on the way to accomplishment of the next stage.

(2) The points at which the "evolution" of the program will be evaluated are noted. Beyond "Guidelines" (present status of the program), evaluation will be of potential results.

FIGURE 7 - MODEL OF THE EVOLUTION AND EVALUATION OF THE PROGRAM
above will be first undertaken in the context of the goals of the program. These include both the explicit statements contained in the Guidelines themselves (see Appendix I) and the implicit intentions evidenced in the documentation which accompanied the preparation and approval of the Guidelines and program (City of Edmonton, Planning Department, 1981-1982). The last part of this section will deal with the Guidelines and the program in its totality.

1. TO USE THE CONCEPT OF DEFENSIBLE SPACE TO ENCOURAGE TERRITORIAL BEHAVIOR AND A STRONG SOCIAL NETWORK IN THE NEIGHBOURHOOD THROUGH THE USE OF PHYSICAL DESIGN STANDARDS. (Appendix I; 8-10)

a) Interpretation of Theory

The creation of the "sense of control" associated with territorial behavior and Defensible Space has been addressed in the Guidelines through statements requiring boundary definition. Three scales are identified: those of the Neighbourhood (by peripheral fences and gateways to the Neighbourhood), of the projects (by hedges, fences and signage), and of the unit (required but method unspecified). Unfortunately, the requirements for the most vital of these scales, that of the unit, are mentioned only fleetingly as a part of "internal fences around separate developments", and do not receive the attention they deserve based on the importance of these spaces to the residents. Territoriality has been shown to begin with the private space, and to extend beyond the unit only once this "primary territory" is judged to be secure.

Several of the guidelines refer to design attention enhancing security and allowing for surveillance in play areas, parking lots (above and below grade), landscaped open spaces and semi-private interior spaces. These
guidelines follow fairly closely the original intentions of Oscar Newman, and their validity is borne out by the literature researched, in that a sense of security is important to an individual's propensity to defend his territory.

The high level of maintenance proposed in the Guidelines and required from developers in Terra Losa has been shown in the literature to be an effective way of "marking" a territory against unwanted intrusion, and of expressing control over and pride in the environment.

The Guidelines are deficient in two important respects in terms of the variables which are known to affect the degree of control residents believe they have over their environment. First of all, privacy is not mentioned. The literature has shown that territorial behavior and privacy are closely linked - the former is an extension of the desire for the latter. The Guidelines could well be amended to require close attention to details of the private and semi-private spaces created both within and between units. Secondly, the literature identified the personalization of space by the residents as one of the most effective ways of marking the territory. The Guidelines make no mention of the usefulness of this concept, and they would be improved by doing so. Individual developers could still, of course, allow for this at later stages of development.

One of the Guidelines is in direct opposition to the defensible space concept. In several studies it was pointed out that one way of designing for environmental control was to limit the non-resident traffic through the area. In Terra Losa, however, it is explicitly stated that there shall be walkway connections between the business park and the residential area. While it may be important for the workers in the business park to have easy
access to the community center (and to their homes if they live there), this need exists only for at most ten hours a day. The remainder of the time, and on weekends, the business park will be unsupervised, and there will be no controls over who travels between the two parts of the neighbourhood, and for what purposes, during that time. Perhaps the decision to choose accessibility for a few over limitation of access for potentially many was made hoping that the boundary definition of the business park would deter intruders in non-working hours.

The Guidelines call for designs which enhance opportunities for interaction - no long and/or monotonous blocks of buildings, walkways, interior spaces in multiple housing developments, small groupings of units - all of which were mentioned in the literature as increasing the opportunities for casual contacts. Residents working in their neighbourhoods were found to interact more than residents who did not, and the developers' concept promotes Terra Losa as a living and working environment. Finally, the Community Center is proposed to provide a space for more formal, and group, involvement which based on the literature it may very well do.

b) Assumptions regarding causality, and expectations of originators

The major failing of the Guidelines from this point of view is the degree of faith placed on the presumption that increased interaction can be designed for. In fact, and as described both in theory and the case studies reviewed, all that can be created is the potential for increased interaction. The actual degree of involvement will depend very much on the residents themselves - their propensity to neighbour, their circle of non-resident friends, their similarity to others in Terra Losa, their degree of self-sufficiency, and their mobility. None of these variables can be
controlled through physical design, and the developers have only limited, indirect (and fallible) control over the eventual population through the marketing strategy and tenant selection process.

It is unlikely, in any case, even if the residents' characteristics are not of the type conducive to formation of relationships, that the Neighbourhood would be totally devoid of social interaction. As Wellman and Edney have said, simple sharing of space can be a basis for creation of ties, and even among the "uninvolved", a minimum level of involvement will be present to maintain social control.

All that is stated as a goal is the encouragement of territorial behavior and increased interaction. However, the tone in which this goal and most of the Guidelines are written is fairly deterministic, and makes creation of the type of Neighbourhood desired sound much too definite a proposition if the Guidelines are followed. All the field research on these topics indicate that the effect of design on control, and especially of design on interaction, is one of potential enhancement at best, and that their attainment is far more dependent on the characteristics of the population, which cannot be manipulated (except very indirectly) by designers. As Kuper (1953, 27) has said, "There is no simple mechanical determination by the physical environment." The goal in fact is ambitious since it includes not only the implementation of the Defensible Space concept but also the "next step" identified by numerous authors in the literature review, namely increasing the opportunities for social interaction.

The Guidelines have missed several important points which are important to increasing potential for interaction. The first of these is again the utility of individualization (especially of semi-private spaces) as
providing outwardly visible signs of compatibility which are important in making initial casual contact. The second is the importance of the manipulation by the designer of the functional distance, or orientation, between units to enhance the possibilities for visual contact (meanwhile retaining privacy) and to create an awareness of other people which is an initial step in more intensive interaction and in the recognition of neighbours vs. strangers.

c) Interpretation by Implementors

Since for the most part the possibilities for error in the stage of the program linking the written Guidelines and their physical implementation, in relation to the skills and abilities of the implementors, are similar for all the goals, they will be discussed in the last part of this Chapter.

d) Unanticipated Results

The implementation of the Guidelines may result in unanticipated consequences for two reasons: the faulty assumptions and interpretations which were mentioned above, and the lack of consideration of certain matters during their derivation. These could be termed "intervening" or "uncontrolled" variables.

One such matter is the lack of consideration of the amount of "non-local" traffic which could pass through the residential area because of its proximity to the business park. Not only will "legitimate" employees, who are likely to be strangers to the residents, be passing through the neighbourhood to reach the Community Center to which they will also belong, but due to the limited hours of operation of the office-type uses proposed for the area, there will be long periods when surveillance is limited and unobserved entry, to the business park and through to the residential area
will be possible. The effects of this free access is not considered in the Guidelines.

Secondly, the success of the program could be limited if the "marking" symbols related to territoriality are not understood or are ignored by non-residents.

e) Anticipated Results

The overall likelihood that this goal will be achieved is fairly good, though it could be improved by attention to the deficiencies mentioned above. This conclusion is reached on the basis that the resident population is expected to be fairly homogeneous, and that the self-selection process, combined with the marketing strategy, will probably discourage the majority of intensely private individuals.

2. TO CREATE A NEIGHBOURHOOD WITH ITS OWN STRONG IDENTITY, STRONG COMMUNITY SPIRIT AND A "SENSE OF PLACE" (Appendix I; 1).

In discussion of this goal, the concepts of "identity" and "sense of place" will be defined as resulting in a neighbourhood which is a recognizable entity, with the probability that residents will be able to identify what its boundaries are, and whether or not they belong in it. "Spirit" is defined as the sense of belonging or attachment discussed in Chapter Three.

a) Interpretation of Theory

The Guidelines' requirements for clear boundary definition and entryways along the outer edges of the Neighbourhood coincide with "natural" barriers (the roadways, all of which are major) which have been shown to aid residents' recognition of their neighbourhood.

Provision of standardized street furniture and signage, and the
requirements for common architectural and landscaping elements will introduce a sense of unity into the Neighbourhood, and once one enters the gates one will recognize that the entire project was coordinated. Appearance alone should set Terra Losa apart from the neighbourhoods on its boundaries, and the fences and gates will reinforce its separateness for both residents and strangers.

Identity is being planned for at several scales, the largest being that of the Neighbourhood. At smaller scales, uniqueness is to be stressed through the variety required between projects, and within projects. The variety should satisfy residents' desires to be associated with small groups (as opposed to larger more anonymous ones) though this factor is more importantly recognizable in creating feelings of involvement.

b) Assumptions regarding causality, and the expectations of originators

Again, the literature has revealed that the major determinants of degree of attachment are not one that planners and designers can manipulate. In this case, it is types and intensity of social relationships which are the uncontrollable variable and, as has been discussed above, residents will establish their patterns of interaction to suit themselves. Length of residence is also a factor in determining attachment, and considering the "target population" and the mix of tenure types proposed, it is likely that the residents will be fairly mobile.

It is unfortunate that the achievement of a sense of belonging is for the most part beyond the influence of the designer, because it is a major determinant of the perception of friendliness in the Neighbourhood, which in turn affects the propensities to defend territory and to interact, as well as residential satisfaction.
c) Interpretation of Implementors

The comments provided in the last section relating to the skills and abilities of the implementors also apply to this goal statement.

Once again, the Guidelines are deficient in one major respect - the lack of a requirement allowing personalization of semi-private space, which would allow visible expression of pride and the norms to which involved residents desire to conform.

d) Unanticipated Results

The Planning Department was actually concerned at one stage that the developers' concept for a separate identity would create too separate a neighbourhood, and that its residents would not feel themselves to belong to the larger community, West Jasper Place, of which they are part. Some major service functions, such as shopping facilities, social services, and large-scale recreation facilities are only provided on a community-wide basis. It may be that if Terra Losa residents see themselves to be too much "on their own", they will feel that they are being deprived of some basic urban services. It is therefore suggested that the community, as well as the Neighbourhood, be stressed in the marketing strategy.

e) Anticipated Results

Regarding the design elements intended to engender attachment to the Neighbourhood, it is likely that the high standard of appearance of the Neighbourhood will aid in this. It will be remembered that at its smallest scale, a sense of belonging begins with attachment to the home, as a symbol of the self, and extends outward to the Neighbourhood as security increases. If the Neighbourhood projects an image which the residents see as an attractive reflection of themselves, attachment is more likely to develop.
The Community Centre will, in all likelihood, provide a physical focus for the Neighbourhood, especially if its design incorporates the "landmark" element suggested. Membership in the Center, which is automatic for all residents, will also set them apart. The success of the Center as a focus will depend, however, not on its architectural design alone, but on the participation of the residents in it. Again, automatic membership may enhance the probability of their using it.

In total, it is likely that the Neighbourhood will be a well-defined, identifiable unit. The degree of residents' attachment to it, while not hampered (and perhaps to a limited extent encouraged) by the design, cannot be predetermined, since it is derived in a purely subjective way.

3. TO CREATE A NEIGHBOURHOOD WHICH DESPITE ITS PHYSICAL DENSITY IS CONSIDERED BY ITS RESIDENTS TO BE A GOOD PLACE TO LIVE (City of Edmonton, Planning Department, 1981-1982)

The desire expressed in this final goal could be defined as that for high levels of residential satisfaction.

a) Interpretation of Theory

As the literature review revealed, the major physical determinant of satisfaction has been found to be the appearance of the area at both the macro scale and, especially, at the micro scale. The Terra Losa Guidelines are particularly explicit in requiring high standards of appearance and maintenance. Remarkably, attention is paid in the Guidelines to nearly every element which in Chapter Three was described as contributing to overall appearance: human scale, project individuality, variety, maintenance, nature of spaces created, massing of structures and landscaping.

Specifically with regards to open space, the Guidelines require provision of play spaces differentiated on the basis of age, which has been
a contributing factor to satisfaction. As well, (though not directly related to the Guidelines but rather the Neighbourhood Plan) the total amount of open space in the Neighbourhood will be considerable - 24.75 acres of school and park sites, a 6.0 acre lake, plus on-site open space. Despite the physical density of the Neighbourhood, the amount of available open space is higher than in a typical neighbourhood. The availability of so much open space, together with the landscaping required and the provision of the Community Center, should more than adequately meet the desires for such facilities, and thus result in high levels of satisfaction.

Also related to satisfaction are the Guidelines' references to careful attention to the semi-private spaces in multiple housing projects and the responsibilities of management (at least regarding exterior spaces).

On-site factors which have been shown to affect the perception of crowding are also dealt with in the Guidelines to a very considerable extent. The adequacy of open space has already been discussed. The definition of spaces (semi-private, public, etc.) is required, so that to some extent privacy is addressed. Clustering of development and limitations on massing reduce the perception of crowding. The perception is also related to the perception of distance from industrial and commercial areas, but the interface between the residential and office park portions of the Neighbourhood receive careful attention, and the design, siting and landscaping of the office park is controlled to ensure it is not intrusive to the residential area. Again though, greater attention to maintenance of privacy, particularly between units in multiple housing structures, is required, since deficiency in this area has been shown to significantly affect both perceptions of crowding and residential satisfaction.
Personalization, again, is important to satisfaction since it has been shown that the degree of importance placed on items by residents might correspond to the amount of control they have over them (Michelson, 1977, 292).

b) Assumptions regarding causality and expectations of originators

Once again, the intentions of the Guidelines are seriously limited by the influence that physical factors can have on levels of satisfaction. The literature shows that the single most important influence on these levels is the perception of friendliness in the neighbourhood, a factor which cannot be planned into a project.

c) Interpretation of Implementors and expectations of originators

This goal more than either of the other two will be affected by the skills and abilities of the implementors (see next section of this Chapter).

d) Unanticipated Results

Residential satisfaction has been shown to be influenced by the characteristics of the resident population as well, so that knowing the group to whom the Neighbourhood is to be marketed may reveal whether or not high levels can be expected. Residents are expected to be young, and young people have typically been less satisfied, perhaps due to unfulfilled expectations, but on the other hand, they are also expected to be middle-class and childless, both groups with fairly high levels of satisfaction.

e) Anticipated Results

Overall, except for the lack of control of peoples' perceptions, the prospects seem good for the attainment of this goal, probably more than for the other two since the major predictor of residential satisfaction, a high level of maintenance, has been assured.
CONCLUSION

This section includes comments, based on the model in Figure 7, which apply to the program and Guidelines as a whole, and a summation of this part of the evaluation.

a) Interpretation of Theory

Throughout this Chapter it was repeatedly stated that provisions for personalization of space were not included in the Guidelines. It may very well be that developers intend, at later stages in the process, to allow for this, since it is really a management decision rather than strictly one of design. It is felt, however, that the factor is important enough to have warranted some degree of attention in the document that was, after all, the overall strategy for the Neighbourhood.

Similar comments cannot be made in respect to the inadequacy of requirements for privacy. The importance of this variable to control, interaction, involvement and satisfaction has already been discussed. Attention must be paid to it at the design stage, since it is affected so much by functional distance (or orientation) which can be manipulated by the designer. As well, inclusion of provision of privacy at the initial stages could be expected to be less costly (in terms of both economic and psychological costs) than retrofitting.

In examining the entire concept behind the Design Guidelines, it could be suggested that the relevance of the Defensible Space concept is doubtful in this situation. First, though this Neighbourhood is high density for suburban Edmonton, it is not as dense as the projects examined by Newman. Secondly, it is not located in the urban core, surrounded by non-residential uses and "threats" to security, but rather by low density
residential neighbourhoods. Third, research has shown that the perception of crime and concerns about personal safety and security (not to mention crime rates) are lower in Canada than in the U.S. where the concept originated. Fourth, the socioeconomic situation of the residents of this Neighbourhood will be considerably different from that of Newman's sample, and it has been suggested in the literature that these rather adverse conditions had an effect on crime rates and feelings of security. Finally, the concept is deterministic in nature, and is therefore open to criticism. Almost all the literature dealing with the evaluation of residential environments states at one point (if not continually) that the influence of the physical environment is limited. Though it may be a "catalyst" for behaviors, the social and cultural aspects of the resident population must also be considered in order to derive an understanding of the total environment.

b) Assumptions regarding causality

The most significant assumption made by the Guidelines is that physical design has the ability to influence human behaviors and attitudes. The validity of the deterministic viewpoint has been discussed repeatedly in this Chapter, however it bears repeating again that physical design has only a limited influence and that the best that can be hoped for is an increase in the potential for the positive behaviors endorsed by the Guidelines' creators. The Guidelines would have greater credibility if the "potential" nature of their influence were more strongly stated and explicit.

c) Interpretation by implementors and expectations of originators

On the whole, the program and its documents make a considerable number
of assumptions regarding the skills, abilities and powers of the implementors (who include planners, architects, designers, developers, marketing strategists and political decision-makers). The first of these is that the Guidelines are written in such a way that their true intent is clear to the implementors. Though the Guidelines specify what physical massing and groupings of buildings are forbidden (i.e. long blocks, long rows), few positive statements are made regarding what should be designed (for example, small clusters, culs de sac, and so on).

The second questionable assumption is that the implementors are capable of carrying out the intent of the Guidelines once they have been understood. Planners, designers and architects, being human, vary considerably in their imagination and technical skills; the chances are that Terra Losa will be designed by its fair share of good (or higher) and mediocre (or lower) standards of professional expertise.

Related to this aspect is the degree of commitment or effort which may be expended in implementing the program.

As stated previously (ref. Patton, 1978) an evaluation of this part of the program implementation cannot be carried out in advance; nor, therefore, can the originators automatically assume the enthusiastic participation of the implementors.

The third part of a complete evaluation as identified by Patton involved the examination of the program's process. Again, the performance of the procedures to be followed cannot be evaluated until it is used, however the originators of the Guidelines have assumed that the mechanisms for their implementation are strong enough to ensure compliance (both initially and over the longer term), and that the process itself will work
smoothly and with minimum opportunity for error. It can be dangerous to make these kinds of simplistic (possibly naive) assumptions, particularly when the lives of so many people are involved and where the controls used (agreements and zoning) are relatively inflexible. On the other hand, this program is an innovative one, and all new ideas can expect a certain amount of friction during their initial stages.

d) Anticipated Results

Though the evaluation of the first two goals would seem to indicate at best a limited chance of attainment, it would appear that the third goal, which was, by coincidence, expressed implicitly and for the most part by the City, has a good chance of being accomplished.
CHAPTER SIX

REGARDING METHODOLOGY

It is not the purpose of this thesis to describe a research design for the evaluation of the Terra Losa Guidelines. However, since much of the literature reviewed in Chapters Three and Four involved case studies, it seems appropriate to briefly discuss the manner in which data has been shown to be most successfully gathered, and any problems which might arise obtaining and analyzing it.

Data collection methods will be discussed first, followed by suggestions regarding appropriate measures, analysis of data, threats to validity and finally, justifications for omissions in the information presented in this thesis and areas of research not pursued.

DATA COLLECTION

Almost all the field surveys reported in the literature used questionnaires to obtain the opinions, reactions and attitudes of the resident populations toward their environment. The approach can be justified in that it allows consistency in data collected as well as an opportunity to acquire emotive information. Decisions as to whether questionnaires should be interviewer- or self-administered, depth of questioning, size of sample and format seem to have depended a great deal on time and money available, though in all cases, statistical significance and representativeness were considerations.
Other methods of data acquisition have been suggested, to obtain objective as well as subjective measures. Observation of resident behaviors, demographic profiles, and particularly interesting, surveys of management have been suggested as supplementary sources of information if time and money is available (Francescato, 1974, 289).

Though the primary purpose of this evaluation is to assess the effectiveness of the guidelines as they have been applied in Terra Losa, not to reveal the levels of satisfaction in more conventional areas, the language of the Guidelines encourages a comparison of Terra Losa with other, less rigidly controlled residential areas in the City. The same survey conducted in Terra Losa could be applied to other neighbourhoods in Edmonton to determine their similarity of differences and to provide a standard environment against which to test the effects of the Guidelines. It is suggested that neighbourhoods of two types be selected to provide the most complete comparison: suburban neighbourhoods of typical density and similar age, and high density neighbourhoods (which by virtue of historical development in Edmonton are not suburban). Each type of neighbourhood should be further categorized on the basis of the existence or absence of a community center within its boundaries.

Since the basis of the Defensible Space Concept is a desire to reduce crime, it would be appropriate for the evaluation to determine the incidence and rate of crime, by type, within Terra Losa. Data on other neighbourhood types as described above would also be appropriate even if a full residential survey is not carried out. This data must be presented in a matter which allows true
comparisons; i.e., a rate (per thousand or whatever) should be used rather than absolute numbers.

In terms of the organization of the questionnaire, Cooper (1975, 10) used an interesting method to assure that questions were asked to cover all of the design measures being evaluated. She set up a chart for each goal, identifying the objectives being tested (i.e., in this case the Guideline statement), the physical solution used, and the corresponding question(s) asked of the residents. It is not suggested that only these types of questions be asked, however, as will be discussed below.

Keller (1968, 110, 122) and most texts on questionnaire applications suggest that probing for an elaboration of generalized responses is required, especially when dissatisfactions are being discussed. For example, negative comments about the unit often are actually complaints about neighbours.

Regarding the timing of the evaluation, most surveys required a minimum residence period of six months. It is suggested that before the Terra Losa evaluation is undertaken, that a variety of unit types, and several sites (hopefully dispersed through the Neighbourhood) should have been developed and occupied for at least that period, in order that any differences in results by dwelling unit type can be observed, and the settling-in effects discounted. By that time too, the Community Center will be built and in operation, so its effects can be seen.

If interest within the Planning Department and from City Council warrants, and time and money is therefore available, it is suggested that this first study be followed by another, some years
in the future and certainly after full development, to determine what the long-term effects of the Guidelines has been. Some of the attitudes and behaviors discussed in Chapters Three and Four are time-dependent so changes over time could be expected to occur in the results. As well, the mobility of the population could be determined for comparison with satisfaction levels.

Surveys of the physical environment can also play an important part in the evaluation of Terra Losa. A checklist compiled from Guideline statements could be used to see how completely the stated intentions of their originators have been fulfilled. As discussed in Chapter Five, the influence of physical design is limited, but part of the evaluation of any project should be the determination of whether or not the "program" can be implemented, and whether there were any problems in either achieving the design objectives stated, or in understanding what it was that was supposed to be achieved. The results of this survey would have to be carefully interpreted, since problems of comprehension and implementation could be the fault of the individual designer as well as of the Guidelines.

SUGGESTIONS FOR MEASURES

Many of the case studies reviewed had derived measures of the major topics discussed. These were generally composed of several questions directly or indirectly addressing the topic being investigated, the responses to which were combined in some way into an index or scale of that factor.

These measures will not be discussed here. A list of those which may be of use, and their source, is presented below: index of cohesion (Smith, 1970, 152); measures of neighbourhood attachment
(Gerson, 1977, 140); overall residential satisfaction (Ermuth, 1974, 111); measure of neighbouring behavior of women (Wallin, 1953); scales for psychological crowding at unit, neighbourhood and community scales (Schmidt, 1979, 110); neighbourhood interaction scale (Caplow and Forman, 1950, 358); index of (dis)satisfaction (Michelson, 1969, 19); perception of crime (Hartnagel, 1979, 181).

Samples of questionnaires used to evaluate neighbourhoods are very common in the literature and most follow along similar lines. Many questions use Gutman or Lickert scales for responses so relative responses are obtained and differences in the respondents' perceptions of the definition and meanings in the question is minimized. Stereotyping of questions and set responses should be avoided, as well as imposition of the designer's values and biases on the survey by selection of questions and responses. The particular situation of Edmonton, in terms of growth, culture, residential opportunities and the like, should be considered in both deriving questions and interpreting the results.

ANALYSIS

The majority of cases reviewed used correlation and regression to explain the relationships and differences among and between variables. Often too some variables were controlled for while testing relationships between others.

The organization of Chapters Three and Four should aid in determining which relationships should be tested in evaluation results, since each major topic was discussed as a dependent variable, and the factors that influenced it as independent variables.
Care must be taken however in interpretation of results since in many cases, research results indicate an extremely complex cause and effect relationship between major topics. Interpretation of results should also keep in mind, and consider, any evolving patterns which would indicate the existence of intervening uncontrolled variables particular to the Edmonton or Terra Losa situation.

**THREATS TO VALIDITY**

Any evaluation or research project is open to criticism if all of the factors which might affect or bias the results are not accounted for in some way in the design. To aid the designer of the Terra Losa evaluation, some of the threats to validity are discussed here.

In reporting results, it is possible that plausible but inaccurate results will be presented, particularly in view of the complexity of the relationships being discussed. To guard against this, care must be taken to not over-generalize results, to verify the responses received through probing or repeated questioning, to avoid the biasing of results through the imposition of one's own values, and to assure the appropriateness of any assumptions made. Wellman and Leighton (1979, 367) have stated that "When not found in the neighbourhood, community is assumed not to exist." That is, if attachments to place and to people are not based on the geographic unit of the neighbourhood, researchers may assume that no attachments exist, while in fact it is the unit on which they are based which has been wrongly identified. Attachments can also be based, as shown in Chapters Three and Four, on areas both smaller and
larger than the neighbourhood. The repeating of results of the Terra Losa evaluation must take care that the same assumption is not made unless verified.

Since Terra Losa is at least at present a unique area in Edmonton, the results obtained in the evaluation should not be generalized over other or larger areas without taking considerable care to assure that such a procedure is justified.

Finally, within the experimental design, the designer must make explicit the assumptions made, the area for which the evaluation applies, the controls placed on any analysis, and the justification for only limited use of control groups.

In examining the literature, a number of 'unknown' factors were discovered which should be identified in the evaluation, since they may derive unexpected results. The effects of the self-selection process due to the market strategy (in the absence of the details of that strategy) cannot be predetermined with absolute certainty, nor can the propensity of residents to engage in recreational or neighbouring activity. The change in lifestyles being experienced by western society as a whole, especially factors such as working wives and increased concerns with fitness, were not present for the most part in the literature reviewed so results in Terra Losa may differ from those documented. The effects of any other non-physical factors (cultural, social or personal) cannot be predetermined. The sample surveyed may include, for example, chronic complainers whose responses will skew results. In some cases, people may only be made aware of inadequacies in their environment once they are questioned about them. As well, use of American and to a lesser extent British
data as a basis of comparison with Canadian results could be questioned, through if the cultural and attitudinal differences between these groups are kept in mind during interpretation, their effects may be minimal.

Similarly, in this work, there are several unknowns which may affect the veracity of the evaluation of the goals and objectives presented in Chapter Four. First, the timetables for commencement, duration and completion of construction, the order of development of sites, the exact timing of the opening of the Community Center and its programs (and what those will be) is not known. The details of the marketing strategy of the developers are not known. General economic and housing market conditions at the time of occupancy and the rent structure of the Neighbourhood are both unknown.

Finally, despite the existence of legal agreements requiring their adherence to the Guidelines, the level of commitment of the developers to initially contributing to and thereafter continuing the high quality of construction and maintenance of the environment cannot be predetermined.

MATTERS NOT DISCUSSED

This section includes justifications for matters not examined in this thesis.

No research was undertaken regarding the means by which residents chose to live where they do or the trade-offs made in this decision-making. Terra Losa will operate in a free market economy, and it is assumed that its residents have made a free choice to live there, and may make similarly unrestricted decisions to move.
It must be remembered that the scale at which this evaluation takes place is that of the Neighbourhood. Not attempt has been made to examine the level of resident satisfaction with the dwelling unit itself, not the level of life satisfaction of the resident except as these measures relate to neighbourhood satisfaction.

The advantages and disadvantages of high density residential developments are not discussed, since the (eventual) presence of high density in Terra Losa is a fait accompli, and not open to debate or change. For similar reasons, the need for and acceptability of the various housing types to be built are not considered.

The process by which 'perceptions' are derived by individuals is not discussed, though one of the assumptions made in the thesis is that people do have individualized perceptions which affect (or perhaps are) the way they view their environment. The importance of privacy, territoriality, interaction and attachment to the individual's mental health is likewise not studied. This thesis is interested in the interface between these subjective assessments and design, not in the psychological determinants alone.

The meaning of 'neighbourhoods' to individual residents, and how this meaning varies between them, is not researched or discussed. The frame of reference for this thesis was Terra Losa, as defined by the Neighbourhood Structure Plan boundaries, since it is over that area that the Guidelines are to be applied.

Finally several characteristics of the resident population were not included. Kinship is not differentiated from other types of social interaction, since as stated previously the major effect of kinship is felt in older well-established neighbourhoods. Cultural
differences are not discussed, since it is assumed that the Neighbourhood residents will be similar in this respect to those already residing in the rest of West Jasper Place, where no groupings of cultural groups have developed. Finally, the effects of race are not presented since for the most part, racial relations in Edmonton are not an issue.
CHAPTER SEVEN

CONCLUSION

The foregoing thesis has presented a method of approach for the eventual evaluation of the Terra Losa Neighbourhood, through the evaluation of the Neighbourhood Design Guidelines and the program which derived them.

Many authors in the design occupations have during the past twenty years emphasized the importance of post-construction evaluation in the design process. This thesis has gone a "step further" by evaluating the goals of the project before construction. Ideally, the results of this examination would be incorporated into a revised version of the Design Guidelines, and thus the eventual development. Due to the fragmented ownership of the Neighbourhood, the history of disagreement among those owners and the lack of a mechanism which would allow the City to force the owners to change, it is very unlikely that this will ever occur. In any case, it is the basic premises on which the Guidelines are based - that design can determine human behavior, and that the Defensible Space concept is appropriately applied in this situation - which are faulty. Simple revisions to the Guidelines, then, would not accomplish much.

On a more positive note, however, it will be remembered that as far as the achievement of residential satisfaction is concerned, the Guidelines as written do include references to most of the design features which have been shown to influence its achievement (and indirectly to affect the other major topics discussed). If any
amendments were to be made to the Guidelines, it is suggested that these references be expanded upon and given greater emphasis as points to be looked for during design review. This of course would mean a major reorientation of the whole development concept and the marketing scheme which the owners may not be willing to undertake.

While the findings of this work may never be applied in the Guidelines for the area used as a case study, they may find more general application in the work of the Planning Department. Specifically, the information this thesis contains can be used in reviewing development concepts and applications for development permits for high density areas and sites. To ease such reviews, a checklist could be derived of those design features identified in the literature as being desirable, to be used against each application. On larger scale projects, the limitations of physical design in terms of its influence on human behavior should be kept in mind while reviewing development concepts. The same caveat should be remembered when deriving City policy on residential design.

Returning to the case study area, it has been stated that it is unlikely that the City will be able to force changes to the Design Guidelines as written. However, the City still retains the power to exercise discretion in reviewing site plans in the development permit process, and through this discretion can direct that certain changes be made to the designs. In this way, the City might implement the suggestions made above regarding a refocussing of the Guidelines' emphasis to one encouraging good design for residential satisfaction. Though this approach means more time and attention spent by City staff on what would otherwise be fairly routine
applications, the large size and density of the Terra Losa project (and therefore the large number of people affected), and the experimental nature of the concept, would seem to make this additional effort worthwhile.

In sum, if this thesis can be said to have derived a "result", it must be a generally positive expectation that the Terra Losa neighbourhood will be one in which its residents' basic physical and psychological needs as well as some of their aspirations will be met, though not necessarily as a result of the factors the Guidelines' originators had suggested.

This judgement can only be verified, however, through the implementation of the evaluation, and it is hoped that the civic authorities and the developers involved will view the next stage of the evaluation process as one which is viable and necessary.
BIBLIOGRAPHY


Coleman, R.P. *Attitudes toward Neighbourhoods: how Americans chose to live*. 1978.


APPENDIX I

Terra Losa Site Design,
Landscape and
Architectural Guideline

1982 05 03

Source: City of Edmonton, 1981.
Terra Losa

Site Design, Landscape and Architectural Guideline

AN INTERPRETATION AND RESOURCE GUIDE TO THE TERRA LOSA RESTRICTIVE COVENANT
USE OF TERRA LOSA, SITE DESIGN, LANDSCAPE AND ARCHITECTURAL GUIDELINE

The information contained in the Site Design, Landscape and Architectural Guideline document is provided as an aid to assist the Applicant to understand the objective of Terra Losa. The Developers and its designated "Developer's Representative" assume no responsibility for the accuracy of the information provided, or for any losses or damages resulting from use thereof.

Terra Losa has endeavored to plan a neighbourhood with strong identity and incorporate the philosophy and practices of crime prevention through environmental design. The planning of defensible space will be carefully examined in the development of individual sites.

The Applicant should thoroughly review the restrictive covenant and guidelines before starting the design of any project.

THE TERRA LOSA DEVELOPERS

CHATEAU DEVELOPMENTS LTD.
CITY LUMBER COMPANY (1973) LTD.
CITY OF EDMONTON
COLUMBUS INVESTMENT CORPORATION LTD.
HOFFMAN MANAGEMENT LTD.
INTEGRATED BUILDING CORP. LTD.
MELCOR DEVELOPMENTS LTD.
M.W.F.T. HOLDINGS LTD.
R.S.F.T. HOLDINGS LTD.
Terra Losa

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I Objectives

Terra Losa is a suburban community within the Edmonton urban environment. Terra Losa takes the form of a high quality, mixed use development that provides a residential component and a business park. Special attention to the quality of environment, the neighbourhood identity and crime prevention through environmental planning will enhance the desirability of Terra Losa.

The two elements, residential and business, are knit together by boundary definitions, common landscape/architectural requirements, linking walkways and central recreational facilities. These elements will contribute to strong neighbourhood identity for those who live in, work in, and visit the community. Terra Losa will provide a recognizable identity and sense of place.

The Terra Losa neighbourhood outline plans shows the proximity of the various proposed land use districts.

The Site Design, Landscape and Architectural Control guideline has been developed to assist in achieving this quality of spirit, strong identity, and sense of place, with an emphasis on defensible space. All developments shall be planned and designed as an integral part of the proposed streetscape and overall development concept of Terra Losa.

The Terra Losa neighbourhood identity will be ensured by creative implementation of the concepts addressed in this Site Design, Landscape and Architectural Guideline and the restrictive covenant registered on each parcel of land.
Terra Losa Neighbourhood Structure Plan

Proposed Districts
A  two family dwellings
B  row housing
C  medium density multi family
D  low rise apartment
E  medium rise apartment
F  high rise apartment
G  business industrial
H  parks
I  schools - parks
J  neighborhood commercial

POSSIBLE INTENSIFICATION
aaa 10 storey f.a.r. 2:1
bbb 5 storey f.a.r. 2:1
ccc industrial service centre
ddd community recreation centre

Note: Plan to be replaced with Subdivision plans when registered and specific districting is in place.
II Administration

The Site Design, Landscape and Architectural Guideline ("Guideline") will be provided to prospective builders.

The Applicant shall be required to submit plans for any proposed project in Terra Losa to the "Developer's Representative" (shall mean that person or firm appointed by the Developers) prior to applying to the City of Edmonton for any permits. The Developer's Representative has the responsibility to review all plans to ensure the Applicants meet the objectives of Terra Losa as set out in the restrictive covenant and the Guideline. The Developer's Representative will use professional assistance as necessary to review Applicant's plans to ensure that creative aspects of design are duly acknowledged relative to the total neighbourhood of Terra Losa.

Applicants will be required to address the elements of good design practices: human activities and defensible space, as set out in section IV of this Guideline, behavior, open spaces, the spatial relationship of structures and compatibility with neighbouring developments. Within this framework, the builders are encouraged to strive for individuality in each project.

The Applicant will be required to provide the Developer's Representative in duplicate:

a) A site plan showing the provisions for front, rear and side yards, the provision for off street vehicle parking, access from street, pedestrian ways from parking, amenity areas to buildings and sidewalks. This plan will be used to evaluate siting of building and the uses on the site.

b) Plans showing elevations in sufficient detail to demonstrate architectural design and to identify exterior materials and finishes including samples, colour chips and other pertinent data to fully identify all exterior materials and finishes.

c) A landscape plan sufficient in detail including contours, and top of slab of ground floor of each building to allow evaluation of buildings and types of landscaping relative to environmental aspects of crime prevention, plus the aesthetic features of the proposed project.

d) Plans showing the interior halls, public spaces, entrances, parkade layouts, walkways and the people movement areas from sidewalk to entrance, building to parking, building to garbage etc.

e) Plans locating and showing nature of all signage with sufficient details as to graphics, size, colours.

f) A written statement as to proposed use.

Terra Losa 3
g) An undertaking that the plans approved by the Developer's Representative will be the plans submitted to the City for Development and Building Permits - also a statement as to what if any relaxations of City requirements will be asked for.

h) For development applications for parcels owned by the City or purchased from the City, the Applicant will follow a slightly different procedure in obtaining approval, however, adherence to the Guideline will be required.

Developer's Representative can be reached at:
Ill General Design Provisions

1) All buildings must be designed by or in formal association with a registered architect. All landscape design must be carried out by or in formal association with a certified landscape architect.

2) All developments must conform with the City of Edmonton Land Use By-Law, the Land Use and Development Restrictive Covenant Caveat and the Site Design Landscape and Architectural Guidelines. The requirements of the Terra Losa Covenant shall be considered as supplementary to the requirements of the Land Use By-Law.

3) Compliance with the Terra Losa Guidelines shall not be taken as approval or compliance with City, Provincial and/or Federal regulations, policies and/or standards. Responsibility for obtaining appropriate approvals from Government authorities and complying with their various regulations, policies and standards shall always be that of the Applicant.

4) The Developer's Representative will be the approving authority for adherence to the Terra Losa "Land Use and Development Restrictive Covenant Caveat", except for developable parcels owned or sold by the City. The City will be the approving authority and will act as the Developer's Representative for the purpose of the Guideline.

5) A human scale for projects shall be created through the effective coordination of natural materials, colours, sizes and textures. Landscaping and architectural details shall be designed to relate to human scale activities.

6) Individuality is strongly encouraged with a deliberate attempt to avoid uniformity. Entranceways shall be easily identified.

7) All building projects shall be designed to take into account adjacent developments. The visual mass of a multi-family project shall be minimized by careful siting of unit clusters, the use of vegetation, berms, and fences. The siting of long blocks directly along any street frontage, the use of large monotonous blocks or a series of essentially identical units will not be approved. Significant degrees of articulation, in roof elevation forms, heights and products will be encouraged to create compatible designs.

8) Signage by the Developers at the various entranceways will establish certain elements, such as the base and framing to be incorporated throughout the neighbourhood as a common feature.
9) Parking areas developed at grade, underground or in structures shall be designed with particular attention to surveillance methods, lighting, pedestrian access and safety. Unobstructive views must be maintained in order to implement the principles of defensible space.

10) All buildings shall be designed with due consideration of the practices and philosophy of "Defensible Space" and outlined in Section IV.
Signage will help create a common element throughout Terra Losa. There is a standard structural system for all Terra Losa signage. Each project has the freedom to apply its own graphics to identification signs, however, all information signs will use standardized graphics. Thus a common element will be created by structure, and variety created by individual graphics.

The identification signage shall have a base expressing the same characteristics of the signage at entranceways. The signage can be free standing on the base or framed in a fashion similar to entrance signs. The frame to be 75mm pipe or tubular steel channel, finished in an earthtone colour.

The information signage shall be mounted on similar pipe or tubular channel stand, the horizontal portion being the full length of the information sign. In all cases the lettering on information signage will be in Helvetica Bold or Medium, black on a white background.

The size and location of signage should be considered as an integral part of the architectural plans. For buildings in the IB Districts with multi tenancies and CNC projects the signage must be in keeping with good architectural practices.

All signs shall be located on private property. On corner sites, no signage will be allowed within the triangular area of 8m, on the private property. No temporary, moving or flashing signs will be allowed.
IV Defensible Space

"Defensible space is a living/working environment which can be employed by inhabitants for enhancement of their lives while providing security for family, neighbours and friends."

Oscar Newman

GENERAL PHILOSOPHY

Terra Losa is a planned mixed use neighbourhood based on the principles of crime prevention through the use of defensible space concepts.

There are two ways to address defensible space. A simple way of achieving defensible space by physical means and a more complex way by psychological and social means. Both methods are valid and they can interact.

By physical means, safe, livable neighbourhoods can be created through attention to design of streets, design of interior spaces in buildings, design of buildings in relationship to their surroundings, use of landscaping, design of recreational areas, etc. By psychological and social means, neighbourhoods are made defensible by people developing a sense of territory by cognition (or knowing) and then defending or protecting that space by bonding together in community organizations.

Physical space can be designed, but social response cannot be forced. It must be allowed to develop freely without intervention or paternalism. However, defensible space through social means can be stimulated by providing some form of the physical communal network as in the case of Terra Losa through the provision of a community centre.

Some of the ideas suggested by defensible space run counter to traditional planning philosophies in that in order to develop an attachment to "home turf", people must be able to recognize differences in their environment. Traditional planning through regulations has too often been concerned with eliminating differences. A city planned on defensible space principles therefore, would appear to be a collection of distinctly different neighbourhoods with each community emphasizing its own individuality through the use of physical features and social organizations.

In the case of Terra Losa, the Guideline deals almost exclusively with the design of physical features as they can be readily identified and described. The incorporation documents presented in connection with the community centre are concerned with describing the means by which the social organization necessary to Terra Losa can also be encouraged to develop.

The Guideline is written to maintain high aesthetic and architectural standards as they are important aspects of defensible space. Buildings and public spaces which do not have good design and do not appear to be well maintained, are not cared for by residents. This in turn may lead to vandalism and related undesirable behaviour patterns.
Defensible Space - General Provisions

The significant physical and architectural features of Terra Losa suggested by the philosophy of defensible space and the reasons for their incorporation in the Guidelines are noted below.

1) External Boundary Definition
   This is necessary so that residents can recognize the limits of their neighbourhood or "territory". This can help develop a sense of community and therefore leads to self-policing and self-protection. Boundary definition can be achieved by berming, fencing and signage.

2) External Gates
   These help to define when a resident passes into his or her territory and thus established a zone where strangers or intruders can be more readily identified.

3) Internal Fences Around Separate Developments
   In this way zones of influence can be established which identify public, semi-public, and private zones. This achieves on a smaller scale, what external boundaries establish on a neighbourhood scale. As a result residents develop a protective feeling towards their housing and immediate confines.

4) Privatization of Streets
   To reinforce a sense of community, privatization with the use of gates, street lamps and street furniture of a consistent design should be considered.
5) Definition of Multiple Housing and Apartment Developments

It is recommended that individual housing developments be clearly identified in Terra Losa by the use of distinctive fencing, hedges and signs.

Further, for medium and high rise buildings, gates visible from the main entries should be incorporated.

6) Play Areas

Play areas should be decentralised wherever possible, with a clear hierarchy of uses, i.e. - adult and teen areas, tot lots, etc. Children's play areas should be observable from units, and should include areas for seating to allow adults to supervise the children playing.

7) Self Policing

In planning housing developments avoid designing areas that cannot be readily observed or overlooked by windows. Planting should be transparent and areas should be clearly visible.

8) Interior Spaces

Common areas in higher density buildings should be designed to encourage social interaction. e.g. lobbies should have seating close to the entrance windows, laundry areas should also include seating etc. Corridor design, elevator placement, lobby layout should take into account the principle of observability to reduce opportunity for crime.
9) Parking

Large at grade parking areas which cannot be easily observed should be avoided. Planting should be transparent in parking areas. Underground parking shall include adequate lighting and security surveillance methods. Entrances to elevators and stairs should be clearly visible. Long corridors should be avoided. Pathways from parking areas (at-grade or in structures) to dwelling units and the parking areas themselves must be clearly lit, and should allow a clearly visible route to the unit entrance.

10) Proximity of Work Places to Residences

This principle will be further reinforced by walkways bicycle paths etc., through sites from the business area to the residential area, and through residential parcels to the community centre and park.

The following map identifies areas for special attention to landscaping and sketches suggesting the treatments for these areas.
V Landscape Provisions

It is the intention of these provisions to provide an identifiable cohesive neighbourhood, and clearly identifiable "home territory". Landscaping should be used to create the impression of enclosure and boundary definition, rather than to provide heavy screening.

1) Each site shall be landscaped in accordance with the plan approved by the Developer's Representative.

2) Specifically, all plant materials shall be of a species capable of healthy growth in Edmonton and shall conform to the standards of the Canadian Nursery Trades Association.

3) The mixture of tree sizes at the time of planting shall be equivalent to a minimum of 50 percent larger trees. The minimum size of small deciduous trees shall be 60mm caliper and for large deciduous trees, 90mm caliper. The minimum size for small coniferous trees shall be a height of 2.5 meters and for large coniferous trees a height of 3.5 meters. Shrubs shall be a minimum height or spread of 600mm at the time of planting.

4) Coniferous trees shall comprise a minimum proportion of 1/3 of all trees planted.

5) Wherever space permits, trees shall be planted in groups, having regard to (12) below.

6) The "A" and "B" landscape modules hereafter specified are for use in specific areas.

7) Berms - Some berms will be rough graded and shaped by the Developer. Where such berms exist permission from the Developer's Representative is required before altering the berm. Details on berms are available from the Developer's Representative. The Applicant will be responsible for the finished landscaping of berms. All berms will be subject to utility clearances and the results of the engineering reports on drainage.

8) Where sites abut exterior boundaries of the Terra Losa plan area, and fencing is used, all boundary fences will be of the same design and stain on wood as specified by the Developer's Representative.

9) Fencing which serves individual sites and/or buildings should be designed so as to permit a balance between security and visibility consistent with the principles of defensible space.
10) Where "Vistas" occur at "T" intersections the "Vista" will require landscaping per illustration.

11) Landscaped areas including boulevards shall be maintained by the landowner.

12) Landscaping should be transparent in overall appearance and developed so as to avoid sheltered opportunities for crime.

13) The Developer/Applicant will be responsible for any costs incurred for installation and maintenance of landscaping on public right-of-ways.

14) Lighting of all non residential parcels shall be designed to reduce negative effects on residential parcels.

15) In all cases where berms are proposed on, or adjacent to, road rights-of-way the distance between the apex of the berm and the edge of the carriageway must be less than, or equal to, 7.62 m. If the distance is greater a swale must be provided on the right-of-way side of the berm.

The following map identifies areas for special attention to landscaping and sketches suggesting the treatments for these areas.
An Applicant will be required to comply with the Supplementary Landscaping Requirements when developing a site which has one of the conditions identified here.

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Lots Abutting 178 Street

The Developers will construct a 1.0m high berm along the east side of 178th Street. The applicants will be required to supply topsoil, seed and landscaping as per module "B".

Lots Abutting 95 Avenue

The Developers will construct a 1.5m high berm along the north side of 95th Avenue. In the residential district the applicants will be required to supply topsoil, seed and landscaping as per module "B".

The applicants of the commercial/industrial sites will be required to landscape as per module "A".
Lots Abutting 170 Street

To improve the visual connection between the business park component of Terra Losa and 170th Street, the existing berm may be regraded, provided on site structures and landscaping provide an equivalent sound buffer (60dBA Ldn) for the residential area. The applicant will be responsible for the costs in changing the berm, landscaping, or replacing landscaping and necessary testing for conformance by an acoustical engineer.

Buildings will be set back from the property line as per the City of Edmonton standards. Fencing will be permitted on the rear yard property line and parking will be encouraged within the rear yard setback.
The storm water retention pond serving the entire development will be constructed consistent with City standards. In order to provide a park setting peripheral to the pond, the "B" landscape module will be used between buildings and the 100 year storm line. Docks, if developed, must be at least 20m apart and of a design approved by the Developer's Representative.

The 3m strip of land between the property line and the 100 year storm line must be maintained by individual lot owners. Views should remain open to this lake, therefore dense planting along the strip is discouraged.
Pedestrian walkways will be required on several sites and encouraged on others where they provide part of a physical communal network between the work/live community centre.

The Developer will provide the base fill for the berms where pedestrian walkways are required.

The applicant will be required to provide and maintain appropriate landscaping, relative to walkways and uses abutting walkway right-of-ways or easement.

In order to effectively buffer the residential area from the business park and CNC site, the developers will rough grade a 2m high berm and install a hedge along the property line. The individual site owner must topsoil and seed the portion of the berm within his site and install plant material alternating between the A and B landscape modules. Fencing is discouraged in this zone but will be considered at a minimum distance of 6.5m from the property line at the discretion of the Developer's Representative. The height of 2m berm from the base which is to be established in the pre construction engineering drawings.
Residential Lots Abutting Business Roadway

The Developers will construct a 1.5m berm which will minimize the impact of the business park on the residential development.

The individual lot owners will be responsible for the installation of topsoil, seeding and the development of the berm to the standard of the B landscape module. Fire exits will be permitted if required.

Vista Lots

Where "T" intersections occur, additional landscaping will be required. Special building designs or additional setbacks should be considered to create an effective vista. The complete vista of landscaping and structures will be examined.
The landscape treatment will be a balance of aesthetics and principles of defensible space planning. Visibility from sidewalks and entrances to buildings must be preserved. The landscaping should not provide opportunities for undesirables to hide or commit crimes.

To provide aesthetics, various combinations of the landscaping modules can be used.

**Using Landscape Module A**

**Using Landscape Module B**

**Retaining Wall, Berm & Landscaping Buffer**

A wall 1.0m maximum in height is to be utilized with a berm slope maximum of 3:1.

**Berm and Landscaping Buffer**

This option consists of a 1.2m berm with 3:1 maximum slopes on both sides. Planting density will be as per the light module. The berm height to be measured from top to adjacent street curb.
The landscape module "A" shall be composed of the following materials:

5 deciduous trees; preferably green ash or basswood, a minimum of 85mm caliper

3 evergreen trees; preferably white or green spruce, a minimum of 2.5m in height

22 shrubs; preferably all deciduous, a 600mm height/spread minimum

The "B" landscape module shall be comprised of the following materials:

3 deciduous trees; preferably green ash or basswood, a minimum of 85mm in caliper

2 evergreen trees; preferably white or green spruce, a minimum of 2.5m in height

10 shrubs; preferably all deciduous, a minimum of 600mm in height/spread
On recognizing the principles of defensible space for at grade parking, the creative use of landscaping will be required to establish an aesthetically pleasing parking area. For every ten parking stalls in a row, an area equivalent to one stall will be used for landscaping to provide visual relief.

All areas used by vehicular traffic must be graded, paved to drain and be maintained at all times. Entry ways must have gates or landscaping treatment to define their location and purpose.
VI General Architectural Provisions

1) The creative use of building materials is encouraged to project a feeling of warmth. Materials of earth tone finishes such as textured concrete, wood, brick, stone and stucco with appropriate wood trim will be encouraged.

2) Applicants are to incorporate sloping roof elements on each building. Townhouses can be designed with sloped roofs and on high rises and commercial buildings the sloping detail can be provided through screening of mechanical systems and mechanical rooms, plus the use of sloping details in canopies and detail at entranceways.

3) Certain aspects of design are not easily prescribed by rules and regulations, especially such intangibles as the spatial relationship of structures and open spaces, the architectural compatibility of buildings, the patterns of human activity and behaviour. Therefore, the Developer's Representative will use the services of professionals to evaluate the compatibility of each Applicants proposal.

4) Individuality of each project will be encouraged with the visual tie to the neighbourhood by use of materials, landscaping and signage.

5) Within each project, a mixture of residential size of unit and types will be encouraged.

6) All applications will be closely reviewed and evaluated against the design criteria specified in the General Provisions for Defensible Space Section IV.

7) The locating, screening and operational aspects of garbage collection will be examined.

8) The location of fans, mechanical systems and exterior lighting must be designed to have the minimum adverse affect on adjacent properties. All exterior mechanical systems must be screened.

9) Business/Industrial buildings on sites adjacent to residential areas will have exterior walls facing the residential sites finished with a minimum of textured block or concrete.

10) Applicants for residential project parcels adjacent to 178th Street will provide a mixture of dwelling unit types to create a transition in height and built form, away from the roadway.

The following sketches and comments are used as examples to illustrate how materials and design features could be used, and how various land uses might relate.
It is the intention to create diversity of building styles, not only through form, but through the use of materials.

Sloped roofs and front facing buildings will encourage rear and side yard parking to provide an interesting streetscape.

The low rise to medium rise transition illustrates change of materials, yet retention of a common element, the sloped roof.

Elevator penthouses and mechanical rooms shall be screened. The above example uses sloping enclosures which reflect the building form of the adjacent lower rise developments.
A residential quality can be achieved through use of materials, sloping roofscapes, colour, coordination of material, and textured facades. The use of similar materials will maintain common characteristics through the transitions of density or use.
To compliment the character in the residential developments adjacent to business districts, business building forms can assume and reflect residential characteristics, such as sloped mechanical enclosures and use of brick, wood and wood framed stucco.

The face of buildings in the business area towards residential areas shall be finished to a minimum of a textured concrete or textured concrete block.

Parking, exterior lighting, fans, outside storage, garbage must be planned for in a manner to reduce negative impact on adjoining sites.
The Developers have committed to set the mood for the neighbourhood by:

1) Developing and installing entrance signage to identify the neighbourhood and encourage the sense of territory.

2) Developing the berms along 95th Avenue and 178th Street and along the rear property lines between the residential and industrial areas.

3) Developing and installing distinctive street lights, street furniture and planters to "Privatize" the Terra Losa streets.

4) Developing the basic walkway system which will tie the business/industrial, residential and community centre together.

5) As part of the servicing and storm water management system the Developers will create a lake which will be an identifiable feature of the neighbourhood.

6) Developing the Community Centre as a focal point.

7) Developing the Boulevards, which will be grassed and mature trees installed at approximately 10m spacing.
Terra Losa - The Developer's Commitment

1. Residential Entryway
2. Business Park Entryways
3. Pedestrian Walkway
4. Community Centre

- Residential
- Business-Industrial
A well defined entrance will be developed at each of the four entrances to the residential component. All residential streetscapes will consist of separated sidewalks and boulevard street tree planting, and residential entrances will have landscaped entryways with signage. The Developer will be responsible for the development and construction of the residential entryways and streetscape elements.
In order to establish a character for the Business Park, an entryway exhibiting spatial treatment will be developed at each of the four entrances to the Business Park. The business entryways will have single sidewalks, landscaped medians to City standards and landscaped signage. The Developers will be responsible for the development and construction of the business entryways.
A 1.5m pedestrian walkway will be provided by the Developers to link the residential and business components of Terra Losa. The walkway will be developed on private property within easements or within utility corridors wherever possible, and will be curvilinear within the defined right-of-way. Lighting will be to the City of Edmonton standards, berming will be encouraged, and fencing will be discouraged within the setback zone.

Individual lot owners will provide continuous landscaping adjacent to the walkway as per landscape module B. It is important from a safety point of view that the type of landscaping should provide for the perception of a public pathway, and that planting should not, at maturity, allow places for concealment.
The Terra Losa Community Centre is designed to reinforce the identity and image of the total community. The Community Centre will, with a vertical statement such as the tower, be the focus point of the community.

The Community Centre will be constructed of materials and finishes consistent with the Restrictive Covenant. Located in a park setting with walkways, berms and the lake, creating an inviting focal point.

The purpose of the Terra Losa Community is to provide a multi-use meeting/recreational facility for residents and tenants of the business park.

The Community Centre is provided to give a sense of community and to encourage residents to develop self-help community projects such as neighbourhood watch, snow clearing, control of garbage disposal, daycare, and community involvement including both recreational and social groups.
Programme Objectives of Community Centre

A. A Place to Meet: Seating Area
   - To create an informal, intimate gathering place
   - Small group functions
   - Relaxed atmosphere with view to lake
   - Area for displays
   - Minor recreational activities

B. A Place to Meet: Main Hall
   - Multi-purpose space to accomodate social needs:
     a) Community sponsored dances
     b) Concerts - including stage facility
     c) Meetings regarding community affairs
   - Central in function

C. A Place for Recreation: Indoor
   - Multi-purpose main hall provides for mixed indoor recreational activities:
     a) Vollyball
     b) Halfcourt basketball
     c) Floor hockey
     d) Gymnastics, fitness classes
     e) Table tennis
     f) Badminton

D. Change/Washroom Facilities
   - Small locker room change room facility to accommodate recreational needs
   - Possible changing area for summer/winter outdoor activities

E. Educational Related Uses
   - Enclosed area that can also be used for meetings (privacy) while other functions are in session
   - Daycare, playschool classes (indoor - outdoor play area)
   - Craft classes

F. Landscaping - Outdoor
   - The area will be fully landscaped
   - Walkway linkages will circle through Terra Losa. They will begin and end at the community centre building
   - Two outdoor tennis courts with lighting

G. Administration and Functional Areas
   - Central control, reception, office area
   - Kitchen facilities for minor food preparation and a base for caterers to operate from for larger functions
   - Sufficient storage area for the purpose of storing chairs, tables, indoor recreational equipment and storage of daycare equipment
   - Mechanical room and janitorial equipment storage