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PRIVACY IN THE PERSONAL LANDSCAPE

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PRIVACY IN THE PERSONAL LANDSCAPE

by

Patricia Anne Newell

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STATEMENT BY AUTHOR

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ABSTRACT

The thesis examines the relationship between income and perceived value of privacy in the personal landscape. Security and aesthetic factors are separated out in order to obtain a more accurate assessment.

Data obtained from aerial photographs of two neighbourhoods with differing income levels showed a markedly stronger emphasis on barriers which provide visual privacy in the more affluent neighbourhood. Survey questionnaire results confirmed this finding. Each neighbourhood was examined separately to establish a cross check. It was significant that within each neighbourhood the importance of landscape privacy increases with income level. A difference in the location of the barriers reflects the different cultural background of the neighbourhoods involved.

The ecological basis of the desire for privacy is examined through a cross-disciplinary literature search. Territoriality, Proxemics and Crowding are examined in relationship to Environmental Planning and Design. Included is a section on the history and function of Courtyard Housing, which, de facto, privides for privacy. This type of housing is seen as a solution to conflicting demands of the environment, individuals and population density.

CHAPTER 1

INTRODUCTION

It is only very recently in the history of North America that the availability of space has become a problem. For thousands of years the continent existed with its areas of forest and prairie subject only to the cycles of nature. The American Indian changed this cycle somewhat. The Pioneers on their arrival had vast amounts of space available to them if they chose to adventure through the new land. Landscape privacy was of no concern to them. Neighbours were an asset. They shared knowledge and labor and their presence offered increased protection against the native indians. We are now past that stage. While the neighbourly attitude exists still in rural areas, much of North America is covered by city and suburb. This is bound to affect the traditional American scheme of open landscaping. An additional factor involved in the changing of attitude towards neighbours and the private residential landscape is the increasing wealth of the American middle class, and the upward mobility of the people. Historically, whatever area of the world and in whatever era, where space is limited, privacy has been the perquisite of the wealthy. The more wealthy an individual, the more the privacy that can be bought.

Besides the measures of security and aesthetics that large amounts of enclosed land offers is the corollary of the added prestige and status it confers. For the purpose of this thesis both the very rich and the very poor will be excluded from study. The one because they have almost unlimited control over their environment including the personal landscape treatment around their home, and the other because they frequently have little space and no resources, and therefore practically no control over their personal landscape. Other significant factors involved in the choice of residential landscape treatment, besides those of economics and population density, are the biological urge for survival, the climate, cultural tradition and government policy. The urge for survival will be assumed to be common to all races of whatever economic status. Cultural tradition is expected to be a significant variable as is government policy. Climate would normally be a contributory variable but as this study is concerned with a small geographic area, the City of Tucson, Arizona, the micro climates will not be examined, and climate will be regarded as non-varying.

The thesis will study landscape barriers and home landscape treatments in Tucson, with the aim of quantifying such factors as security needs, boundary functions, and privacy provisions which go beyond the function of the first two.

CHAPTER 2

THEORETICAL BACKGROUND AND RESEARCH FINDINGS

It has been suggested that the nature of the people-environment interaction at the scale of personal space may best be studied by an ecological approach (Sarrinen, T. 1976). This chapter will present a background of knowledge that is helpful in understanding the people/personal landscape interaction. It also helps to understand why the availability of a private outside space contributes to personal well being and permits "a large number of people to live together in civilised harmony in a very small space" (Blaser, W. 1979).

Territoriality

If we look at research in ethology we find strong indications that animals, human and otherwise, have a basic or intuitive urge to establish territories which are under their control and where functions vital to species survival may be carried on. Ethologically, a territory is defined as "a space in which one animal or a group generally dominates others", (Eiblesfelt, I. E. 1963). Domination may be achieved by divers means such as olfactory markings, territorial songs and fighting threat, among others. By these

means the territory owners usually banish those that do not belong. "Territorial behaviour ensures a certain amount of living space for an individual or a group of animals (Eiblesfeldt, E. 1970). "If a zoo animal is given too little or too much, or the wrong kind of space it will become listless, lose its body sheen, fail to reproduce, become sick, and die" (Sommer, R. 1974).

The setting out and maintaining of boundaries not only permits reproduction and rearing of the young to be carried out in safety but also has an effect on the psychological well being and consequent physical health of the territory owner. "Studies on grouse showed that male red grouse who failed to obtain a territory were also unable to make a pair bond with females, generally were prone to various illnesses, failed to protect themselves from predators, and did not survive the winter" (Watson, A., Moss, R. (1971). John Cassel and his associates at the University of North Carolina School of Public Health have used behavioural references from other species in examining disease patterns in humans. They have concluded that the type of stress patterns arising from disordered social relationships accompanying overcrowded situations leads to disease susceptibility (Cassel, J. 1961, 1970, 1971).

Once a boundary has been marked out and defined it is much easier to defend. Since this, defence of a specified

boundary, is a simple activity, attention is focused on a specified function and limited area. "It has been well established by ethologists that territorial factors are crucial in maintaining stable social and spatial arrangements for many or even most, animal populations" (Saarinen, T. 1976). Since animals tend to distribute themselves equally throughout the larger habitat, spacing, either of individual pairs, or in the social animals, of groups, leads to an enlarging of the species territory. This in turn prevents overexploitation of the area, for example, by overgrazing (Tinbergen, N. 1957; Wynne-Edwards, V. C. 1962).

In establishing territories it is the more aggressive individuals who generally conquer more favorable and larger territories (Eiblesfeldt, E. 1963). In individual groups the maintaining of this domain is a function of the owner's ranking in the social hierarchy. This social hierarchy can be very complex. In most animal societies it is established on the basis of strength and/or intelligence. Some members of the group will seek authority by fighting for it, and the outcome determines the current status of challenger and challenged. In a few groups, such as rhesus monkeys and japanese macaques, the rank position is determined by the standing of the the mother and transmitted by tradition, but this is unusual (Kawai, M. 1958). Again, it is the high

ranking order animal that seeks and holds the better living areas.

As noted by Barrie Greenbie (1981), "Paul Leyerhausen distinguishes between two types of status, or dominance, hierarchies among social mammals. One is what he calls the 'relative hierarchy' because it depends on personal characteristics which do not change with place, except that they are most effective on neutral ground, that is, not on another individuals home turf". The importance of 'home turf' in bestowing a psychological advantage was also noted by Wynne-Edwards in 1962 and Lorenz in 1966.

There is some debate on the extent of human territorial behaviour, but, as Robert Sommer claims in 'Personal Space', "Even if we do not accept the idea of instinctive territoriality in humans, it is still apparent that people actively defend spaces against intruders using the entire repertoire of defensive techniques in the animal kingdom as well as a few new ones". Pastelan, (1970) called for a separate conceptual framework for human territoriality, and Lyman and Scott, (1967) postulated the existence of four types of human territoriality in human societies: public, home, interactional, and body. Lyman and Scott also distinguished between three forms or territorial encroachment: violation, invasion and contamination.

It happens also, that, as Robert Sommer states, "In many situations, defence of personal space is so entangled with defence of an immediate territory that one sees them as part of a single process - the defence of privacy - that involves fundamental questions of space usage and property rights" (1974).

Privacy

Research on Privacy may be seen as an outgrowth of the studies in Territoriality and Animal Behaviour. Based on an urge for security, which may be regarded as a primal need with an evolutionary basis, and acquired primarily by personal achievement or transference of status, the individual establishes a domain in the world. The extent and form of the domain is restricted by the larger environment and the desires of others, together with the status and trading power of the individual. To quite a large degree it is also restricted by the expectations of the individual.

Private personal space is not now, nor ever was, an expectation for the very poor, although Bachelard (1957) believes that mankind shares a primal image of refuge. "I shall show that a human being likes to 'withdraw into his corner' and that it gives him physical pleasure to do so....with nests and above all shells, we shall find a whole series of images that I am going to characterise as primal images".

The notion of a similar primal image underlies the theory of anthropologist Paul Shepherd who suggests that mankind shares a preference for savannah landscapes due to the long phase of development that man spent in such surroundings. The significance of the savannah preference is pointed out by Jay Appleton, landscape theorist, who bases his 'Prospect-Refuge' theory on savannah landscape preferences (1975). This theory proposes the survival benefits of being able to enjoy the security of a hiding place while at the same time observing adjacent areas for possible sources of food supplies.

There is, then, a fair amount of current support for an evolutionary basis of the desire for privacy, which holds that this need is generally held, cross-cultural part of mankind's biological repertoire.

Privacy has also been implicated as necessary for personal growth and development above and beyond survival. Charles Reich stated in 1970, "The self needs, above all, privacy, liberty and a degree of sovereignty to develop. It needs to try things, to search, to explore, to test, to err. It needs solitude to bring sense to its environment." Similarly, Leontine Young, (1966) stated that "without privacy there is no individuality".

The identification and employment of a private space indicates a measure of control over the environment. This

appears to be necessary for personal well-being and functioning. In studies of mental health and the environment Rodin and Baum, (1978) concluded that "learned helplessness occurs in residents of chronically uncontrollable settings". These findings were similar to those of Cassel published in 1971.

The use of privacy as an essential feature of mental health therapy was first called for by Osmond as early as 1957. He stated that "patients must have sanctuaries or private places, analogous to animal's nests, where they can withdraw". Furthermore, he was one of the first to propose graduated levels for the therapeutic environment. "There must also be environments that are graduated in opportunity for interaction. So that patients can achieve a level of interreaction appropriate to their condition and momentary needs. That is, the therapeutic environment must have a series of boundaries that vary in their permeability, and into which patients can gradually move to achieve desired interaction" (Osmond, 1957). This concept, of varying and differentially permeable boundaries, was taken up by Chermayeff and Alexander, and formed the basis for a large body of design research oriented more toward the man in the street, as opposed to the institution.

There are many psychological benefits which accrue to private places. Rest, recuperation, freedom to create

are obviously promoted in such situations. An additional benefit is the cessation of any need to act a part. For a large part of the day persons in our society adopt a 'persona' that is suitable for public viewing. "A major advantage of privacy is the relief from monitoring one's own behavior, from behaving the way others expect one to!" (Pastalan, L. A. 1970). The further apart from reality that the public mask is, the more effort it takes to maintain.

Privacy, therefore, appears to benefit the individual in several ways. Firstly, by offering physical security, secondly, by providing emotional satisfaction, thirdly, by indicating control of the environment, and fourthly, as a means of relaxation and opportunity for growth.

Historically, it has been the affluent who have had the means to obtain privacy. "Privacy was a treasured possession and a mark of status in many early civilisations. To protect themselves from unwanted intrusion, affluent Egyptians had vine hung gardens, Greeks used porticoes, Romans had various enclosures, and the wealthy British had country homes guarded by stone walls and parks. In poorer homes no such privacy existed. Members of the family had no privacy as we know it today" (McGinley, P. 1950).

This is not to say that privacy is not desired by those of less wealth. "Interviews with hundreds of low-

income housing residents reveal that most hold the goals and aspirations of the middle class. The desire for security is not limited to the middle class. The desire for a living environment over which one has personal control is part and parcel of the desire for a life which one controls" (Hall, E. T. 1969).

An Article by Jeanne Goodwin (1964) gives us an idea of a life without privacy.

> What is a slum? It is overcrowding, but few people know what this really means. Overcrowding means never a moment of privacy for husband and wife to build an emotional life together, never a night's sleep unbroken by crying, fretful children in a crib next to the bed, in the kitchen, in the living room, never more than fifteen feet away ... It's nowhere to go to rest and relax. It's a Television set on a broken table in the living room - the only furniture that isn't for sleeping or eating - but who can watch it, the children must go to sleep. It's nowhere to drink a glass of beer - but out in the bar ... it's no place to cook three meals a day but a broken stove and a leaky sink, and no place to serve them. It's nowhere for the children to do homework ... it's no place to pretty up and call one's own ... It's children sent out into the streets ... anything for a minutes peace ... but nowhere to get it (Goodwin, J. 1964).

Crowding

There has been a significant amount of research done on the topic of crowding. This has relevance for privacy related studies as was shown in the previous article by Jeanne Goodwin. In 1962 J. B. Calhoun did a study of rat

communities which showed that rats confined to a limited space with adequate food supplies increased their number up to a certain point, after which they developed abnormal behaviours. They continuously interrupted each other's activities, showed aberrations in sexual behaviour, and the females could no longer build adequate nests nor care for the young. While this is a much quoted study, it has been challenged on several fronts, primarily in applying the results to human populations.

More recent studies on human populations differentiate between conditions of density and perception of crowding. Although the most obvious property of a crowded environment is that it constrains movement and leaves a person open to physical interference from others, there are other variables which affect how these constraints are perceived. A cocktail party evokes less overt avoidance than a similarly dispersed group in a public place such as a swimming pool. For one thing the guests at the cocktail party have expectations of certain things held in common, and they are there for the prupose of socialising. Those people in the public swimming pool are there for a different purpose - to swim, and the presence of too many others occupying much the same space thwarts this purpose. They are also less secure in that they have no knowledge concerning the other participants.

Actual density then does not appear to evoke stress or a feeling of crowding in and of itself. Proshansky (1976), Stokols (1978), and Saegart (1980) agree to the main components of crowding.

"1) The experience of crowding involves the perception of insufficient control over the environment.

2) Crowding evokes the desire to augment the physical or psychological space as a means of gaining control over the environment and avoiding actual or anticipated interference.

3) Feelings of crowding will be most intense, persistant and difficult to resolve when the failure to augment space maximises security threats" (Stokols, D. 1978).

These authors also differentiate between crowding and physical density conditions.

Saegart, however, attributes the notion of crowding to congnitive overload. "The assumption is made that people can attend to only a certain amount of information at a time. People's response systems are limited by their cognitive capacities, habits, personal preferences and tolerances, as well as by the interpretive scripts, schemas, strategies, memories, categories, etc., that they bring to the situation" (Saegart, S. 1980).

Proxemics

This assumption is borne out by current cross-cultural studies being carried out by several disciplines. It appears from these that people of different upbringing, who have been exposed to very different cultural expectations would be expected to perceive and to use space in different ways. Although, once again, the idea of a common evolutionary basis has been noted. "Man's feeling about being properly oriented in space runs deep. Such knowledge is ultimately linked to survival and sanity. To be disoriented in space is to be Psychotic" (Hall, T. 1969). However, while allowing that this basic need to orient oneself in space is cross-cultural, the method of orientation and the perceptual clues used is likely to be individual.

Each person will react to different clues, based upon what he or she has learned, either by trial and error, instruction, or example. The results from trial and error will differ according to the physical environment, those of instruction according to the cultural background, and those of example by the social milieu. This would lead us to expect cultural differences in the concern for private space.

That this is true was remarked by Hall in his studies in proxemics. He noted, that while in the United States

there is a commonly accepted, invisible, boundary around any two or three people in conversation which separates them from others, it is not so in Germany. "For the Germans there is no such thing as being inside the room without being inside the zone of intrusion". Additionally the German tends to have formalised appropriate distance ideas and to be less flexible than the American in changing them. An example was cited of a German newspaper editor who, on moving to the United States, had his visitor's chair bolted to the floor, "at a proper distance", because he could not tolerate the American habit of adjusting the chair to the situation.

Arabs, on the other hand, he says, "are deeply involved with each other. Their personalities are intermingled and take nourishment from each other like the roots and soil. If one is not with people and actively involved in some way, one is deprived of life. Since there is no physical privacy as we know it, in the Arab family, not even a word for privacy, one could expect that the Arabs might use some other means to be alone. Their way to be alone is to stop talking".

Hall noted that "In the West, man perceives the objects but not the spaces between. In Japan, the spaces are perceived, named and revered as the Ma, or intervening

interval. According to Donald Keane, author of living Japan, there is no Japanese word for privacy, but while a Japanese may want to be alone and may not mind people milling around him, he has strong feelings against sharing a wall of his house or apartment with others. He considers his house and the zone immediately around it as one structure. This free area, this sliver of space, is considered to be as much a part of the house as the roof. Traditionally it contains a garden area, which although tiny, gives the householder direct contact with nature" (Hall, T. 1969).

Environmental Psychology

Research work with a focus on environmental perception such as that by Tom Saarinen, Terry Daniel and Erv Zube, all of the University of Arizona, has ranged widely in method and content. Of particular interest is the work on perceptual mapping currently underway. Further studies by Irving Altman and Yi-Fu Tuan have cast a great deal of light on the importance of culture upon perception and expectations.

Kevin Lynch, one of the foremost urban planners in the United States, was the instigator of design research studies based upon people's perceptual modes, which have included studies by Gary Evans (1980), and Don Appleyard (1981) and also cross-cultural studies by Tom Saarinen on perception of geographic areas.

A more functional approach is shown by theorists in the field of Environment and Behaviour. Bechtel's studies on extreme environments (1973, 1975, 1978, 1980a, 1980b) are cases in point. Behavioral mapping used by Ittelson, Proshansky and Rivlin indicates that modifications in the physical arrangement of one room induced changes and the type and amount of behaviors elsewhere. While these research efforts are not cross-cultural, they could well form a basis for such efforts.

The conclusion that may be drawn from these rather varied examples, is that cultural background affects expectation, cognition, perception, etc., and as E. T. Hall puts it, "different use of the senses leads to very different needs regarding space no matter on what level one cares to consider it" (1969).

Planning and Design

"It is possible to design a volume that will torture its inhabitant. During the Spanish Civil War, it is said, an architect was ordered to design a highly refined torture chamber. He developed a translucent, multi-colored polyhydron of sharply intersecting planes - an insidious enclosure in which a locked-in victim found himself unable to lie, sit, stoop or kneel without tilting or tumbling the chamber. The surfaces were slippery, burning hot in the sun,

and frigid in the cold. In any light the colors were distressing if seen alone, and seen together, in their discordant clashing, soon became maddening. If it is possible to create unpleasant volumes, then we should be able to create volumes that will give an experience of pleasure" (Simonds, J. O. 1961).

The comforting nature of a well designed environment is of immense psychological value in a confusing world. As noted by Chris Fawcett (1978), the Japanese shrine environment of the Soka Gakki centre "dissolves contradictions and restores to the believer a unitary world in which demands are in accordance with facts, in which everything reaches a metaphysical equilibrium normally denied by the ordinary environment. The believer experiences a feeling of mastery over and lucidity towards the menacing world because the architecture provides him with a solution for all threats and a posture to assume in the face of them".

While this paper does not propose that designers should design religious shrines each time they plan an environment, it does wish to emphasise the importance of taking into account the primal, unstated, needs of their clients, as well as their stated desires, and to urge upon them the necessity of understanding the cultural background and spatial requirements of each individual client. As

Altman puts it, "Designers ... must become specialists in many levels of behavior, not merely those directly associated with the environment. The designers must become tuned in to the behavioral mechanisms for regulating privacy" (1975).

The following thesis will be devoted to providing some understanding of the behavioral and structural mechanisms employed by residents of Tucson, Arizona, for regulating their residential privacy.

CHAPTER 3

TRACING THE HISTORY OF COURTYARDS

The earliest examples of courtyard housing appear in regions with a distinctive climatic character. Excavations in the middle east uncovered proto-types of this style of dwelling on sites in Mesopotamia, (between the Euphrates and the Tigris) which date back to 2000 B.C. "The houses have an inner courtyard surrounded by cells and open to the sky, thus forming as it were, an outdoor living area, whereas the cells present unbroken rear walls to the streets outside. Thus the house is arranged around a completely secluded centre which is an outdoor space" (Blaser, W. 1979).

The climate of the Middle East is noted for the long, hot, dry summers, with normal temperatures of 37°C. to 47°C. Although summer days are extremely hot and cloudless, the lack of cloud cover permits the air at ground level to rise and radiate away the heat at night. As a result, the outside temperature is considerably cooler at night than inside the house.

In spring, and occasionally throughout the year, in the desert areas of the Middle East, desert winds known as shamals which are hot and often sand laden sweep in from the deserts. Such winds are stressful to living matter.

Their harmful effects may be lessened by constructing wind deflecting barriers such as walls. Such walls serve a multiple purpose, they break the force of the wind, and also provide shade and privacy.

Courtyard housing, which is a most effective design for this climate is still in use today. The fact that the houses adjoin one another cuts down on heat infiltration, as does the narrowness of the streets between, and decreases the amount of open and reflective surface. The streets are also shaded by the house walls. In the interior court the tall walls offer both shade and protection from the winds, and privacy for the inmates of the home, particularly for the women, who are under strict religious and cultural restrictions as to mode of dress and behaviour while in public.

In an article for 'Landscape Design in the Middle East' Turner states "There is no doubt that gardens have flourished with Islam. The typical garden is an enclosed space which provides safety, coolness, shade, water, sweet scents, flowers and greenery. Such qualities are invaluable as a relief from the heat, danger, harshness and glare of te desert" (Turner, T. H. D. 1978).

Garden Design

The Middle East

Despite the extremely arid climatic conditions, it has been found that the design of some of the oldest known gardens

comes from the Middle East. While ancient architectural design survives through the ages on account of the hardness and resistance to decay of materials such as stone, it is significantly more difficult to obtain accurate records of the landscaped portion of the design. Records of garden design come to us through works of art, written, woven, carved and painted.

Both in the Koran and in the Bible we find descriptions of gardens. "And the Lord planted a garden eastward of Eden ... and a river went out of Eden to water the garden: and thence it was parted and became into four heads ... and the fourth river was the Euphrates" (Genesis 2:10).

The Koran describes gardens where true believers go after death. 'Paradeisos', paradise, is enclosed by walls with gates and gatekeepers. There are unfailing fountains and "gardens underneath which rivers flow; besides these there shall be two other gardens, of darkest green ... each planted with fruit trees, the palm and the pomegranate" (Koran, Sura LV).

Islamic gardens were patterned after the descriptions in the Koran. Through paintings, carvings and the famous Persian carpets we see the same themes recurring. There is the 'chahar-bagh' or fourfold symbolic division of the garden by running water; further symmetric subdivisions are emphasized by tiled irrigation canals; clipped plantings, and shade

offered by the Chenar or Tuba tree. Often there is a central tomb or platform from which the water flows in four directions to establish the chahar-bagh. The platform is frequently in the form of a 'square and circle'. This figure symbolises the fact that God's mercy is greater than his wrath. There may be variations in size and in the materials used, but the basic pattern, regularity and enclosure, of the Persian garden remained constant. As described by Marco Polo, the garden of a Sheik in Alamut had "four conduits, one flowing with wine, one with milk, one with honey, and one with water".

These enclosed, irrigated, and partly shaded gardens did indeed offer a glimpse of heaven in comparison to the surrounding desert. The fact that they could be conjured up in such extremes of heat, drought and wind indicates the amount of wealth necessary for their construction and maintenance. Their appeal for visitors, friendly and otherwise, had a a lasting impact. When the Arabs conquered Persia, and continued on through Turkey, Syria, Egypt and Spain, they adopted and transmitted the garden style of Persia to every part of the Islamic world, which from a climatic point of view was appropriate since the conquered countries were similarly arid.

None of the ancient gardens remain in identifiable form, but excavations in Spain of the Alcazar have revealed

part of an eleventh century garden with sunken flower beds and Islamic pattern. Also in Granada, the garden complexes of the Generalife and the Alhambra have been periodically restored throughout their history. The Patio de los Leones is in the form of a chahar-bagh, divided into four quarters, and the Patio de Linderaje has the eight pointed circle-with a square of the Koran.

Mexico

The Spaniards, in turn, when they sailed to the New World, brought with them the concept of the walled garden or 'patio' and constructed them in a similar fashion.

In Mexico, the basic patio was rectangular in shape and was surrounded by a corridor, or loggia, which opened into various rooms of the house. Other design elements transferred from the Old World were the low central fountain of Mudejar design, placed upon a stepped base which repeated the shape of the fountain, the abundant use of handpainted, glazed tile on fountains, benches and walls, and the use of hard paving materials over the ground.

Differences between the patios of Spain and those of Mexico were noted by Rosina Kirby (1972). They include a difference in scale, those of Mexico being more spacious due to a more generous availability of land, and more colorful, because of the native plants of vivid color such as purple jacaranda and blood-orange Mexican Bird of Paradise

(Caesalpinia). A further difference she noted was that the summer sun is less overwhelming in Mexico, and the Mexican patio was therefore "not a retreat from the sun, but a place to enjoy its benign rays".

An examination of a pictorial book on today's Mexican Patios and Gardens by Patricia O'Gorman (1979) shows that the tradition noted by Rosina Kirby continues to the present day. The patios shown are practically always walled on four sides, although, in certain instances, one wall may be pierced by archways which permit a view beyond the patio. There is frequently a covered verandah, or 'loggia', offering shade. These are particularly notable for their appearance of being furnished quite as fully as an interior living room. With sofas, chairs, tables, pictures objects d'art, cushions and bowls of flowers, they would appear to be used both for the enjoyment of the family, and for entertaining.

Hard paving is common to all courtyards shown and there is a very varied use of paving materials. They may be brick, stone, concrete, flags, and are generally set in mortar. Elaborate paving designs are not often found, but when they occur they are on a large scale. Pillars supporting the loggia tend to be massive. They may be round, square, hexagonal and made of stone or wood. The patios vary in the amount of planting, but is generally more so than that observed in Chinese courtyards and less than courtyards in

California. The proportion of open horizontal space to planting is between 2:1 and 3:1. The walls of the patios are often immaculately whitewashed. This, in combination with shadows thrown by foliage, adds a unique quality.

The use of water is notable in many of the courtyards shown. Most frequent is the traditional, low, carved stone fountain, centrally located in the patio, some of which are tiled inside and out. This form appears to encourage the use of potted plants around the perimeter. There are also angled horse-troughs, bird baths, reflecting pools, baroque wall fountains, and swimming pools that are works of art. The water element, whatever form it takes, is normally the visual focus of the patio.

It should be noted that the patios under discussion are those belonging to the wealthy, as they were in the Alcazar and Alhambra and in the gardens of the Persian princes. While it is likely that courtyard gardens were imitated by men of lower income, it is assumed that these unsung courtyards were executed with less expensive materials and on a smaller scale. There are many delightful patios to be seen in Mexico today whatever the income level. However, as always, the vernacular is less thoroughly treated in the literature. In addition the limited availability and high cost of water in arid lands today severely curtails its use for the growing of plants.

China

A brief mention has been made of the contribution of climate, religion, and economics to courtyard housing. A further important factor involved is that of government policy and social attitude. In an introduction to the book Courtyard Houses of China, W. Blaser points out the social significance of the courtyard house and its contribution to harmony among the population.

> The art of building was always subject to certain rules in China. It was an art subservient to the dictates of the state and intended to ensure a frame for the social structure and to fit into the ordered system of the surrounding universe. All the components of the building depended on rules which reflected the status of the owner, economically, socially and aesthetically. The purpose of the rules was to allow a large number of people to live together in civilised harmony in a very small space. To this end, intensive and varied use was made of the open air court in order to eke out the exiguously built living rooms.

The courtyard in China is an enclosed garden open to the sky and is located within the house. It is open to the occupants of the house and completely closed against the outside world. The plan of the house is deliberately keyed to the garden landscape. "Thus, a man can retire from the ungracious outside world into the friendly interior (court)". Photographs of existing courtyards show that a common feature is a verandah - like 'ambulatory', placed to one side of the courtyard. These vary in size, according to my observation

of the photographs, from four feet to ten feet in width, and have a paved, level floor and a roof, which provides shade and shelter from the rain. They did not appear to be used for any purpose other than walking between areas, since there were no tables or benches in evidence. Pillars supporting the roofs of the walkways are generally slender and always round.

Paving varies between packed dirt or gravel and elaborate cobblestone designs, but is often a simple design in cobblestones, with the cobbles often treated in a small area around a plant or item of importance which in effect establishes a frame for these design elements. Planting is restrained. There may be several small trees to a courtyard, but, with rare exceptions, they are set by themselves for enjoyment of their form, rather than massed together. Very often the planting is subordinated to a group of eroded limestone rocks.

These rocks are assigned names derived from the location where they were found. The most valuable come from the bottom of lake Tai Hu. Genuine Tai Hu stones are very rare and very valuable and there are an abundance of 'hand crafted' imitations. The rocks, if present, hold a dominant place in the courtyard. The focus, whether rocks or planting is rarely centered, but is often found to one side of the

area. Fountains were absent, although, in larger courtyards, a still pond might be found.

The United States

While the main thrust of the Spanish conquistadores was towards Mexico, where their influence was sufficient to leave a lasting stamp, they also landed in California. The missions that they established there, many of which may be seen today, were built in the courtyard style.

The Spanish nobility who settled in California also built their homes around a courtyard. It was in these 'patios' that they entertained for large numbers of people, throwing them open for fandango parties (Giffen, Helen S. 1955). Whether this was the impetus for California's 'outdoor living' is not clear since the style adopted was totally different. It would probably be fair to assume that the equable climate and the Spanish model of outdoor entertaining both had an influence.

The United States has been referred to as a 'melting pot' and if any state epitomises that description more than others it is probably California. Other states have had at times a preponderance of one cultural group which set an atmosphere reminiscent of their ancestral area. In certain instances, such as Pennsylvania (Dutch) they set it strongly enough that the atmosphere held for many years even with the

influx of different national groups. This really has not happened with California. The Spanish influence was not strong enough to overcome the input from other sources, neither was the Japanese which occurred later. Gradually the state has evolved a true style of its own.

In landscape, this style was formalised by Thomas Church in 1955. It had the elements of open space, with surfaces usually flat and easily moved upon, areas of hard paving for placement of chairs and tables, planned recreational areas for swimming, basketball, barbeques etc. In addition, there were plantings for shade and softness. The key emphasis was on outdoor living with ease of maintenance in mind. This style was taken up swiftly and has spread across the United States and into other countries.

Now it appears that there is another style evolving in California. This one has a strong emphasis on privacy. The elements of the former style are retained but condensed and removed from public view. While gardens by Church indicated privacy, the new landscape style assigns it a priority. The inside of the house is merging with the area outside, both functionally and in the use of materials. People are not only eating outside but taking baths in the garden, as well as the more traditional efforts to bring the garden indoors.

Privacy and Related Concerns as Noted in Sunset Magazine

A study of Sunset Magazine (Newell, P. unpublished paper 1983) indicates a rising concern with landscape privacy and a similar rise in interest in courtyards, entry-courts, atriums, etc. This has developed since 1976 when a statement printed in the September issue read "Most mass built homes here in the West acknowledge the outdoors with windows to look out of and sliding glass doors for easy access to the outside, but they seldom explore the concept of indoors-outdoors transition".

Since that time there have been at least ten specific mentions of 'indoor-outdoor transition' and a considerably larger number that implied it.

The study of privacy and related concerns as they appear in Sunset - A magazine of Western Living from 1977 until the time of the study, is quite interesting. A table of the most frequently occurring words used to describe qualities desirable in the landscaping of the private home was drawn up (see Table 1 below). The number of occurrences per year, in subsets of each month, was noted and totalled. In any article or separate topic within an article any key-word was noted only once even though it occurred several times. This was thought to be a more accurate estimate of the concern of the Sunset editors and general interest level

of the readership, and negates any bias on the part of the author.

Table 1. Qualities desirable in landscaping the private home.

	1977	1978	1979	1980	1981	1982	Total
Privacy	7	8	3	11	16	20	65
Seclusion	0	0	1	1	2	1	5
Retreat	0	1	1	1	2	2	7
Security	2	3	1	0	1	1	8
Entertaining	2	4	1	2	1	1	11
Indoor/outdoor connection	2	4	0	2	3	3	14
Wind control	2	0	2	3	0	1	8
Noise control	0	1	0	0	1	1	3

From these data it appears that the concern for privacy is on the increase in the Western states, which is the area covered by the magazine. Separate data were not noted for the different states involved, California, Oregon, Arizona, and New Mexico, but this is something that could be done later if any interest arose. It is true, however, that the major portion of the landscape features deal with residential treatments in California.

What emerges most strongly from the study is the urge to use all available space. Particularly noteworthy is the trend to enclose a small front yard or side yard. The demise of the 'public' front yard as frequently seen all over the United States, and almost unique to this country, would seem to be a significant break with tradition. Rockwell and Fitch describe the front yard thus,

> This American form (open landscaping) is an expression of a socially peaceful countryside, of an economy which is not only relatively prosperous but in which wealth is comparatively well distributed. The accidents of history have permitted us Americans, almost alone among the peoples of the earth, the luxury of this type of landscape ... The manicured front lawn is almost exclusively an Anglo-American tradition. In the American suburb this lawn is used as a setting to display the house, like velvet in a jewel case. In most other parts of the world this practice would be found intolerable - a sacrifice of privacy quite as much as an invitation to thievery. (Fitch, J. M. Rockwell, F. F. 1956.)

This analysis of American lifestyle and landscaping was written at the height of suburban influence almost thirty years ago. It appears that change is on the way, although the accompanying corollary, that of the backyard for activities, remains strong today. The Newell study of Sunset magazine indicates that this emphasis on activities continues for the backyard. Therefore, the use of the backyards was not noted unless there was an area designated as 'private' or noted by the author as being fully enclosed for purposes other than active recreation, swimming pools, etc.

The impression gained was that courtyards, garden courts, sun rooms and even the entry courts were places of seclusion, for quiet enjoyment, for sitting and occasional intimate dinners, rather than for recreation or large scale entertaining.

A marked trend was for areas fulfilling the above desires of sitting or dining in outdoor surroundings to be achieved through a controlled climate situation. Here one was apparently out of doors but in fact were in a covered 'atrium'. Since there is some confusion in the usage of such words as, 'patio', 'courtyard', 'atrium', etc., a table was drawn up (see Table 2 below). Frequently occurring words which are used to refer to an outside area, open to the sky, and walled on four sides are listed. The number of occurences per year noted in consecutive issues of Sunset magazine are tabulated from 1977 until the time of the study, January 1983.

This table was drawn up with the same provisions. In any article a keyword was only noted once, even though it occurred several times in the text. 'Patio' was only included if the patio in question was enclosed on three or four sides. In United States parlance, the patio no longer implies an enclosed space but more of a flat, normally hard-surfaced, outdoor living area, which was not the original derivation. 'Atrium' is another problematic word.

Originally it referred to an open interior court which was used by the Romans for dining and relaxation. Frequently nowadays it refers to a covered interior court. During the study no references were excluded, but were separately tabulated. 'Open Atrium' refers to those without ceilings other than the sky or lathe. 'Closed Atrium' refers to those that are climate controlled, with glass or plastic ceilings.

Table 2. Terms used to describe enclosed outdoor areas.

	1977	1978	1979	1980	1981	1982	Total
Patio	7	2	1	3	2	2	17
Courtyard	2	5	3	5	8	2	25
Entrycourt	2	4	3	1	2	1	13
Side court	2	0	3	0	0	0	5
Sunroom	4	1	1	2	2	3	13
Open Atrium	1	0	1	1	1	1	5
Closed Atrium	4	1	2	1	4	1	13
Outdoor room	0	1	1	0	2	1	5
Outdoor living room	1	0	2	1	2	1	7
Garden room	1	0	0	1	1	0	3

Other words used to describe a courtyard also occurred. These were, 'centre court' (1), 'side court' (2), 'bathroom courtyard' (2), 'gravel yard' (5), 'solar room' (1), 'entry garden' (1), 'oasis' (2).

In Totalling these occurrences it appears that words with 'yard' are running about 2:1 over 'patio' as the term assigned to enclosed outdoor areas associated with residential use. This is rather a shame since the historical thread is thereby broken and the rich associations lost. However, it may be that in Tucson the ratio will reverse. While not the main thrust of this thesis, the questionaire will ascertain whether the sample taken from residents of Tucson follows this terminology. It is quite possible that Tucson is more in tune with the past and has retained its historical associations to a larger degree than California.

There has been a history of several hundred years of Spanish influence in Southern Arizona, and there is a strong South-Western flavour to the city of Tucson. It is quite likely that the word 'patio' has retained the original connotation, derived from the Spanish-Moorish tradition. Since Tucson has a fairly strong sense of place and is one of the newer and most unspoiled states joining the Union, its Southwestern and Mexican ties may still prevail.

CHAPTER 4

TUCSON

Climate

The City of Tucson is situated at an altitude of 2,390 feet. It is located on latitude 32, and longitude 111. This means that Tucson lies just within the 'horse latitudes', a belt of permanently high atmospheric pressure which lies approximately thirty degrees either side of the equator. The Sahara desert, the Gobi desert, in fact most of the world's deserts, lie in this belt. Tucsons desert is named the Sonoran desert, and it occupies about 310,000 square miles or thirty-five percent of the land area of Southern Arizona.

"Nearly every striking feature of this special world, whether it be the shape of the mountains or the habits of its plant and animal inhabitants, goes back ultimately to the grand fact of dryness - the dryness of the ground, of the air, of the whole sum-total. And the most inclusive cause of the dryness is simply that out here it doesn't rain very much" (Krutch, J. W. 1969). Normally, Tucson will receive eleven and a half inches of rain in a year. Between the years of 1933 and 1983, the highest rainfall, which fell

in 1983, was 19.2 inches (by November 10) and the lowest recorded amount for this time span was in 1947 when a mere 5.72 inches were recorded. Of the total amount, approximately four and a half inches are averaged by winter rains coming from the Pacific Ocean, and seven inches are dropped by the summer storms that either sweep up from the Gulf of Mexico by an unobstructed southern route, or from a purely local thundershower. It should be noted, however, that a large amount of the summer rainfall is lost to run off, while the slow, more gentle rains of winter are more readily absorbed by the soil. Thus, 'useful' rainfall can be higher in the winter rains, however, the winter rains are not as reliable, since they occur only when the middle latitude storm track is in its central position. "Should it move north of the normal position, drought conditions may prevail throughout Arizona from September through June" (Cross, J. L., Shaw, E. H., Schieffle, 1960).

History

Before the arrival of explorers from Europe the land was occupied by a succession of Indian civilisations, the Uto-Aztecan Indians, the Yumans, the Navajo and the Apache, the Hopi, the Pueblo, the Pima and the Papago. Although many of these tribes have disappeared completely, and others have been decimated, Arizona has the largest Indian

population in the United States. 1539 saw the first expidition into Arizona led by two Spanish friars who claimed the territory for Charles V of Spain. For almost three centuries after this what is now Arizona was under the control of Spain. In American history Tucson is first heard of in 1699 as an Indian 'rancheria' or settlement. In 1763 it was a 'visita' of the Jesuit mission of San Xavier del Bac, founded between 1770 and 1732, nine miles south. It was made a 'presidio' or military outpost in 1776, and, although a few Spaniards may have lived here before, the founding of Tucson as a Spanish town dates from this time. It remained occupied through the Indian Wars, and the early part of the nineteenth century saw the apex of its prosperity under Spanish rule.

Domestic structures of this time, as noted by Mark Frederickson in 'Barrio Historico' (1972) were constructed of "raw adobe walls approximately two feet thick. The roof was supported by rough wooden beams upon which were laid octillo or saguaro ribs, which, in turn, were covered with dirt. Row houses were quite common in early Tucson, and the residences of the more affluent citizens featured a central 'zaguan' or entrance hall. The zaguan was a rather large room and sixteen feet high. It had openings at either end; one opened into the street, the other onto a private backyard. There were no interior halls in the zaguan type houses; the

rooms that were not directly linked to the zaguan had to be reached by walking through other rooms or by walking outside under the cover of a 'toldo' .... Tolâos were also located along walls facing rear patios or garden areas, and their use ranged from shady sitting areas or walkways to sleeping areas in hot weather to cooking centres, etc."

In 1853 Tucson was acquired by the United States as part of the Gadsen Purchase which saw the transfer of 30,000 square miles of territory. Seventy years later, in an interview with a member of the Arizona Historical Society, Carmen Lucero noted "I have often heard my mother say that the coming of the Americans was a Godsend to Tucson, for the Indians had killed off many of the Mexicans and the poor were being ground down by the rich". Whether this opinion was the general one of the time or not, and whether it is current at this time, is problematical. Generally, it appears that Tucson is a well integrated town. The Spanish American community retains its traditional family orientation and pride. Also, to a large degree, it retains the language and customs of the ancestry. There are, however, significantly more Hispanics than Anglo-Americans who are bilingual. The Anglo-American community is more in a state of flux, with people coming and going. Mostly coming. Apart from those of Spanish origin, which constitute 25 percent of the

population, the major ancestry groups for the city are English, German and Irish.

Demographic Background

The 1980 census figures for Tucson report

1) a median income for the city of $14,086,
2) the median age of the population is 28.3 years,
3) the percentage of high school graduates (derived from persons over 25) is 72.7 percent,
4) the average number of persons per acre is 6.4.

Lifestyle

Any statement as to the general lifestyle of the city is liable to elicit a comment proposing the opposite. It is a city of contradictions, of cowboys and symphony orchestras, of remarkable friendliness and high crime, of 'macho' mixed with tenderness. A study, by Melvin Hecht, entitled Climate and Culture, Landscape and Lifestyle in the Sun Belt of Southern Arizona raises some questions as to the legitimacy of some commonly held beliefs concerning the lifestyle of Southern Arizona, and in particular, of Tucson. Of particular interest to this paper is his belief that "The influence of the California culture hearth must be considered in appraising the landscape and lifestyle of southern Arizona". This is, of course, one of the premises of this

thesis: That the increase in privacy related landscape concerns showing up in California over the past few years is just beginning to be manifested in Tucson.

CHAPTER 5

THESIS STATEMENT

The personal landscape is both the accessible physical landscape as it exists around the residential unit, and the sensory environment as it is perceived. The same physical features may be interpreted differently by different persons due to their different sensitivities of sight, sound, smell and touch, and their different cognitive background. Also, each individual may vary according to their current state of emotional being and needs. While psycological studies indicate that privacy of some kind is vital to mental and emotional health, the type of privacy appears to be culturally determined.

This thesis will examine the hypothesis that with the increasing wealth of the American middle class, emphasis on privacy, particularly on landscape privacy, is on the increase in urban, or suburban population areas, due to high density conditions.

Problem Statement

Subject to income and space availability, homeowners can increase their privacy by either moving to a larger or more isolated lot and/or by erecting visual barriers around

the outside property area which is their personal residential landscape. The thesis will employ two separate methodologies to look at the landscape barriers which are used, namely the location, the materials and the function of the barriers.

In addition, the 'patio' or private courtyard will receive special attention, since it is in essence, the most private of personal landscapes. It is possible that the movement begun in California to incorporate the functions of the interior residential space with that of the outdoor residential space, by increasing landscape privacy, is beginning to be manifested in Tucson.

Study Population
Tucson 1983

At the time of study (November 1983) the city incorporated area covers an area of 107.8 square miles. It would be difficult, if not impossible, within the limits of time and resources available to a masters degree candidate, to survey the entire city adequately. However, it is possible to conduct a statistically valid survey of certain neighbourhoods within the city limits.

The thesis surveys middle class attitudes toward privacy. Since the median income for Tucson, (derived from the 1980 census) is $14,086 it is proposed that taking a sample from areas with a range of income between $10,000 and $28,000 per annum would be an appropriate range.

Since cultural background is expected to influence the perception of the personal landscape, note will be taken of this in the questionaire survey. The predominant racial groups in Tucson are of Anglo-American background, with high proportions of English, German and Irish ancestry. Twenty five percent of the total population in Tucson are of Spanish origin.

Sample Neighbourhoods

The sample neighbourhoods have been selected from those neighbourhoods which were locally defined within the context of the 1980 census Neighborhood Statistics Program (NSP), which covers the City of Tucson. This breaking down into neighbourhoods is useful because it identifies areas by various socio-economic factors and crosses census tract boundaries to maintain the integrity of the neighbourhood concept. There is, therefore, less intensity of variation within neighbourhoods than between them. It does, however, result in neighbourhoods which vary in size from 207 housing units (Kroeger) to 13,063 housing units (Pantano East).

Pattern of Growth

Before world War II, Tucson was a comparatively small town. Since then it has had several growth spurts. The neighbourhoods selected reflect this in the number of

building starts per annum, as shown in Table 3.

Table 3. Pattern of growth of selected neighbourhoods in Tucson.

	Neighbourhood 1	Neighbourhood 2
Before 1939	45	15
1940-1949	53	116
1949-1959	161	674
1960-1969	193	131
1970-1980	197	229

Criteria for Selecting Neighbourhoods

The neighbourhoods selected for comparison are, 1, 'El Rio' and 2, 'Rosemont'. They were chosen on the basis of the following criteria.

1) They are small enough in number of housing units to sample within available resources.
2) The areas have grown at a similar rate.
3) The median age of the sample population is close to that of the Tucson average of 28.8 years of age.
4) There is a difference of $8,000 in the median income of the two groups.

An effort was made to locate neighbourhoods which also had a similar percent of high school graduates, and also an ethnically appropriate population mix. However, this was not possible while also fulfilling the other four parameters. (See Appendix A for map of location.)

El Rio

The neighbourhood of El Rio is located to the West of the Santa Cruz river. It is bounded on the North by Grant, on the East by I.10, on the South by Speedway, and on the West by Silverbell. The GDN code is 022. The area includes census tracts 12, block groups 208-212 and block group 3. The area has a density rate of less than one person per acre. This is largely due to the presence of undeveloped river-front land, and public parks. The census figures for 1980 show a total of 415 detached, single family residences which are the subject of study. It should be noted that the area has additional housing of varied definition, i.e., duplex, multi-family, etc., which brings the total number of housing units up to 649.

Demographic Background

The current census figures put the population of El Rio at 2393. Of these, 237 are under the age of five, 506 are between the ages of five and fourteen, 578 are between

fifteen and twenty-four, 398 are between twenty-five and thirty-four, 445 are between thirty-five and fifty-nine, 179 are between sixty and eighty-four, and 6 are eighty-five years of age or more. The median age is 21.3 years.

The majority, sixty-five percent, were born in Arizona. The major ancestry groups in descending order are Spanish, German and English. The figure for those of Spanish origin is 68.2 percent. This is higher than the 25 percent average for the city.

Of persons five years old or more, 63.92 percent were living in the same residence five years previously, 0. percent were living abroad, 27.44 percent were living elsewhere in Arizona and 7.63 percent were living in a different part of the United States.

The area has an average of 48.4 percent high school graduates (derived from figures concerning persons over 25 years of age). The median income is $10,517. The population density stands at less than one person per acre, which is significantly less than the average of 6.4 persons per acre for the city. However, if public land was to be excluded the rate would approach the norm.

Rosemont

The neighbourhood of Rosemont lies towards the centre of metropolitan Tucson. It is bounded on the North by

Broadway, on the South by 22nd, on the West by Swan and on the East by Craycroft. It is made up of several different census tracts, or portions thereof: Tract 33.01 (blocks 501-510), tract 34 (blocks 102-114, 117-118, 165, 201-202, 208-211), tract 35.02 (block 601, block groups 4-5). The area had a density rate of 7.0 persons per acre.

Demographic Background

The current census puts the total number of persons living in the Rosemont area at 3124. Of these 148 are under the age of five, 358 are between five and fourteen, 658 are between fifteen and twenty-four, 518 are between twenty-four and thirty-four, and 853 are between thirty-five and fifty-nine, 540 are aged between sixty and eighty-four and 9 are over eighty-five. The median age is 32.34 years.

The greater proportion of persons, sixty-seven percent, were born in a state other than Arizona. The major ancestry groups in descending order are English, German and Irish. The figure for those of Spanish origin is 13.0 percent. This is less than the average of 25.0 percent for the city.

Of persons five years old or more, 49.62 percent were living in the same residence five years previously, 3.36 percent were living abroad, 27.27 percent were living elsewhere in Arizona, and 10.28 percent were living in a different part of the United States.

The area has an average of 84.6 percent high school graduates (derived from persons over 25). The median income is $18,451. The population density stands at 7.0 persons per acre, slightly above the average for the city.

CHAPTER 6

METHODOLOGY

In examining the function of landscape barriers in Tucson, two methods are employed. Firstly, in order to identify barrier types and materials and their dispersal within differing economic groups, a series of aerial photographs are being used. These photographs were taken by Cooper Aerial Survey in February 1983. They are at a scale of 1" equals 100'. This scale makes it practicable to locate and identify walls, fences, plantings, etc., and to be able to discern the materials used without additional equipment. This section will establish the 'who', the 'where' and the 'what' of the data.

The second section is devoted to ascertaining the 'why' of the data obtained, and is being sought by means of a survey questionaire. This section will be addressed in a later chapter.

Aerial Photography

Each photograph covers approximately one quarter square mile. Since the neighbourhoods chosen for study are similar in size it would be expected that the same number of photographs would be required for each. However, the

boundary definitions set out by the NSP indicate that Rosemont requires four photographs, and El Rio, which has more of a wandering boundary, requires six to cover the same amount of land. This is not a problem. The limits of each neighbourhood are defined by street name, and these streets can be identified on the aerial photos.

The photographs are numbered according to the sequence in the flight pattern. Neighbourhood 1, El Rio is covered by photograph numbers 14.26, 14.27, 15.26, 15.27, 16.27, 16.27. Neighbourhood 2, Rosemont, is covered by photograph numbers 28.22, 28.23, 29.22, 29.23.

Definition of Study Elements

Elements under study are walls, fences, plantings or any form of barrier that are over five feet in height, located on or within the property boundary of each individual detached, single family housing unit. The height of each element is judged according to the length of shadow. Since this varies according to the time of day the photograph is taken, the length of shadow cast by sedan or station wagon automobiles in the particular photograph is used as a reference. This normally averages five feet in height.

The elements have been categorised to facilitate analysis by material and function. To clarify the categories the following list of definitions has been drawn up.

'Rear perimeter' refers to those barriers lying along the boundary of the property, on the side of the home away from the street.

'Interior' applies to those barriers that are found within a more extended boundary barrier. They are still, however, within the rear yard.

'Open' includes all those properties which have no barriers of any kind around the property.

'Mixed' applies to the constituent materials of the barriers, and indicates that the barrier is not uniform in the use of materials. This is due to the fact that the barriers are under the partial control of the adjoining property owners.

'Open mixed' refers to those units which have side barriers but show no effort to finish the final boundary.

'Closed mixed' is a similar situation with any type of material used to link the two sides and form an effective enclosure.

'Mixed with link' is similar, only having one or more sides made up of chain link fencing.

'Unknown-heavy' planting refers to those units with a dense folliage canopy which hinders analysis.

'Subperimeter' refers to barriers which enclose a portion of the property rather than running along the property line.

The elements were tabulated by means of visual examination, and totalled for each area. See Appendix B.

They were then subjected to analysis to establish location, function and material.

CHAPTER 7

AERIAL PHOTO DATA ANALYSIS

El Rio

The elements under study were tabulated individually (see Appendix B) and totalled for the area. Table 4, below gives a summary of information received.

Table 4. Residential landscape barriers in El Rio.

	n	%
Total units	366	100.0
Total enclosed units	247	67.5
Total open units	115	31.4
Unknown-heavy planting	4	1.1
Total enclosed	247	100.0
Total enclosed w/privacy	130	52.5
Total enclosed w/out privacy	117	47.5
Total enclosed w/pool, RV.	10	4.0

In examining the data from El Rio, it appears that

1) roughly half of the homes under study have enclosed back yards.
2) Eight percent have enclosed front yards.
3) There is a substantial percentage of homes which have no barriers whatsoever.
4) Of the total number of homes in question, sixty-three percent do not provide residential landscape privacy.
5) Of those that are enclosed in some manner, fifty-three percent provide privacy.
6) Homes having both a barrier of some kind along the property line and one or more additional 'interior' barriers constitute three point six percent of the total number of homes examined. A large proportion of these are associated with the presence of either a swimming pool or recreational vehicle storage. If those associated with such functions are excluded then the percentage falls to one point six.

Materials

Table 5, below, gives a summary of materials data.

Table 5. Landscape barrier materials in El Rio.

	n	
Total enclosed units	247	100.0
Total walls	61	24.7
Total fencing	23	9.3
Total planting	2	8.0
Total link	54	21.0
Total mixed	44	17.8
Total mixed w/link	63	25.5

Materials Analysis

1) The highest material category is 'mixed with link' at twenty-five percent.

2) The second highest usage is for 'walls' at twenty-five percent.

3) Third most employed was one hundred percent chain link fencing, which was used in twenty-two percent of the units.

4) The next highest usage was for 'mixed', that is, any combination of materials excluding chain link.

5) Fencing which provides for visual privacy is used in nine percent of the units.

6) Planting of thick hedges sufficient to provide visual privacy constituted less than one percent.

Conclusions

As mentioned before, the neighbourhood of 'El Rio' was selected to represent a certain socio-economic level: those above the poverty level, but low on the middle class economic ladder. They are therefore expected to have some degree of control over their personal landscape. The presumption of control is most important if the results are to represent deliberate choices. In other words, the income has to be high enough to be able to satisfy a desire for privacy, if such desire exists.

That there does seem to be such a desire is shown by those homes with landscape barriers providing visual privacy. However, the desire for control appears to be strongly territorial: vis., the large amount of barriers that run along the property line. The reason that these barriers are made up predominantly with chain link fencing may be economic. However, it does indicate a preference for security over aesthetics. This is borne out by the low rate of planted barriers, which are cheap, but generally are the least secure barrier method.

There are also a substantial number of properties which are open, and are not subject to enclosure in any way.

Whether this is due to choice, or to the fact that the cheapest method of landscaping is to do nothing, is not clear.

Of those units that did show barriers, the overwhelming preference for barriers along the property line may indicate that there is a strong pride of land ownership. The importance of the territorial and security factors are indicated both by the location of the barrier and the material used. These factors are emphasised by the use of link fencing around the front yards.

It is strange that the detached, single family homes of this neighbourhood, while standing on similar sized lots to the average Tucson homeowner, showed very little evidence of deliberate landscaping. They did not appear to be using the outside property belonging to the home as additional living space. The question is, whether this is because they have not provided privacy which would make the area more comfortable for personal use, or, they do not require or have not thought of, using the area for this purpose.

Aerial Photo Data Analysis: Rosemont

Data for the Rosemont neighbourhood is derived from the same sources as that for El Rio. The elements and method

of tabulation are identical. (See Appendix B). The major observations are included in Table 6 below.

Table 6. Residential landscape barriers in Rosemont.

	n	%
Total units	955	100.0
Total enclosed units	823	86.18
Total open units	79	8.27
Unknown-heavy planting	53	5.55
Total enclosed	823	100.0
Total enclosed w/privacy	727	88.33
Total enclosed w/out privacy	79 (+17)	11.64
Total assoc. w/pools, RV	120	14.58

An analysis of the data shows the following:

1) Eighty-six percent of the detached single family homes in the Rosemont neighbourhood have enclosed back yards.
2) Two percent of the units have some form of enclosed front yard.
3) Few homes have no barriers whatsoever. The combined total for 'open', 'open-mixed', and 'open-corner' stands at eight percent of the total number of homes in the study.

4) Of the total number of homes surveyed, eighty-eight percent provide landscape privacy.
5) Of those enclosed, seven percent offer a 'rear perimeter' barrier plus one or more additional barriers.
6) The figure for homes with the yard divided into more than two separate areas, which is thought to offer an increased potential for patio use and private recreation, stands at two percent.
7) The number of barriers which occurred in combination with swimming pools, utility sheds, or recreational vehichle storage, is fifteen percent.

Materials

The major observations are included in Table 7 below.

Table 7. Landscape barrier materials in Rosemont.

	n	%
Total enclosed units	823	100.0
Total walls	422	51.28
Total fencing	95	11.54
Total planting	39	4.74
Total link	50	6.08
Total mixed	171	20.78
Total mixed w/link	46	5.59

Materials Analysis

The most frequently used material in this neighbourhood is the masonry wall. This showed in fifty-one percent of the enclosed units.

The next most frequently encountered material category is 'mixed' at twenty-one percent. Following this, Fencing at twelve percent, Link at six percent, Mixed with link at five percent, and planting at five percent, occur in fairly close sequence.

Conclusions

It is significant in this more densely populated area that only eight percent of the homes are not enclosed by any landscape barrier.

A further point of interest is, that while almost fifteen percent of the enclosed yards were associated with a pool or recreational vehicle, the remaining eighty-five percent of barriers fulfill a function apart from security or aesthetics. In view of the fairly strong showing of barriers erected around reduced areas, that is, not along the property boundary, (twenty-six percent), one is led to the conclusion that actual space is less important than controllable space, or, more intimate personal landscape.

Rosemont is a fairly representative middle class neighbourhood. The lots are similar in size to those of

El Rio but there is a significantly higher interest in landscaping and the landscape maintenance is better.

It is apparent from the data that the favoured materials in this neighbourhood are those that offer a good visual barrier. This is emphasised by the use of planting which offers a strong visual barrier with little protective or physical security. Additionally there are several units so heavily planted that analysis could not be done accurately. This heavy planting is indicative of privacy, since the canopy of mature trees offers good screening qualities.

The definite lack of chain link fencing may indicate either a lack of emphasis on security or an increased awareness of the aesthetic qualities. It may also reflect an increased level of income.

One area of the neighbourhood was more spread out than the average for the neighbourhood. Here, where the lot sizes are approximately three acres, the residents have provided a solution to the problem of security by enclosing the total acreage with chain link fence. Within this, one or two had added further link fencing to fully enclose their own property, but the majority used walls around a small portion of the actual property to enclose intimate private areas.

Comparison of Data

Table 8 offers a comparison of the materials usage in the two neighbourhoods.

Table 8. Comparison of materials in El Rio and Rosemont.

	n	n
Total enclosed units	823	247
Total walls	422	61
Total fencing	95	23
Total planting	39	2
Total link	50	54
Totla mixed	171	44
Total mixed w/link	46	63
	Rosemont	El Rio

From this table it may be seen that Rosemont has twice as high a percentage of masonary walls. Conversely, El Rio has five times as many chain link barriers. Chain link is the least expensive form of fence or barrier that offers security, walls are the most expensive. Planted barriers are the cheapest form of visual barrier, but they

take effort to maintain, and do not offer much in the way of physical security.

The larger emphasis on walls shown in Rosemont is very likely the result of a combination of factors. One, a marked desire for privacy, another, an interest in aesthetics, another factor could be that often the whole property is not enclosed and it is therefore more feasible to use a more expensive material.

The fact that privacy does not appear to be a major concern in El Rio, as shown by the large number of units that are totally open, would make the use of chain link acceptable in this neighbourhood, where it would not be in Rosemont.

In summary it appears that there is more emphasis on territoriality and security in the lower income area, and more manifestations of landscape privacy and aesthetics in the upper income area.

We have looked at the 'what', the 'where' and the 'how' of residential landscape barriers. The following chapter will examine residential landscapes in Tucson as to function, form, and style as perceived by homeowners participating in the questionaire survey.

CHAPTER 8

SURVEY QUESTIONNAIRE

In preceding chapters we have looked at the location and materials of landscape barriers in an effort to determine mechanisms for regulating privacy. In doing so we have found certain differences between the location of barriers in El Rio and in Rosemont. Differences in the percentage of materials used in each neighbourhood have also been noted, and some logical deductions have been derived from the data. The primary conclusion is that residents of El Rio show less interest in privacy as obtained through landscape barriers than those in the higher income neighbourhood of Rosemont. This would appear to validate the hypothesis that an interest in landscape privacy increases with income.

A brief questionnaire has been developed to check this conclusion. The primary purpose of the questionnaire is to validate the aerial survey results and to correlate income level with the respondent's perception of landscape barriers. The questionnaire includes closed questions on income level, the location and function of the landscape barriers, and the landscape style and design elements present within the enclosed area. There is also a scaled question

on the importance of privacy to the respondent and an open question on what it is about the area that affords most satisfaction. The questionnaire has been translated into Spanish and used in this form where necessary.

Since there is a possibility that cultural differences may affect the results the questionnaire has been analysed separately for each area. A comparison of data between the two neighbourhoods forms the last section of the chapter. It is not intended that the questionnaire be an exhaustive examination of the style and function of residential landscapes in Tucson. In fact, although the original intent was to concentrate on patios and enclosed courtyards there is currently only a small percentage of residential units in Tucson in which these features occur. As indicated by the aerial survey, Rosemont has 7.0 percent of the residential units with more than one enclosed space in the personal landscape. El Rio shows 2.7 percent. It is not likely, therefore, that patios and courtyards will figure largely in the sample.

Questionnaire Methodology

The questionnaire was developed, pre-tested and restructured. The final questionaire included forty-seven questions which could be administered in a fifteen minute period.

The neighbourhoods were subjected to a random survey on the basis of individual detached single family units as determined through census and observation. This was done initially with the use of random number tables to indicate a starting position and form there on was done on the basis of every ten houses of Rosemont till the area was covered and every six from El Rio. The larger spread for Rosemont is due to the larger number of units for that neighbourhood.

Questionnaire Analysis

Initially the neighbourhoods were examined separately. Frequency runs were performed for each neighbourhood and correlations sought within each neighbournood to indicate any relationship between income and such factors as perceived function, landscape style, satisfaction, and privacy requirements.

El Rio

Perceived Function

Fifty percent of respondents from El Rio considered that walls and fences were generally more important for keeping children and pets in. Fifteen percent answered that they were more important for keeping intruders out. This gives a total of sixty-one percent who named security factors. The remaining thirty-five percent named privacy as being most important.

Function as Related to Income

The percentage of answers which note security against intruders as the most important function of landscape barriers holds constant at 14.29 percent through all income ranges. Those which name the keeping of pets and children shows as a bell curve around persons in the $10,000 to $20,000 income range. Those which name privacy as most important increase with income. See Table 9 below.

Table 9. Barrier function related to income in El Rio

	%	%	%
$20,000-$35,000	14.28	42.86	42.86
$10,000-$19,999	14.29	57.14	28.60
	Intruders out	Children in	Privacy

Location

Twenty percent of the units had no enclosed area. Sixty-two percent of the homes surveyed which had enclosed areas noted their enclosed space as being at the back of the home. Thirty-eight percent had the property totally enclosed by means of a landscape barrier.

Of those with no enclosure five percent saw 'no need' for them. The remaining seventy-five percent noted that this was due to 'lack of money'.

Nomenclature

Sixty percent of respondents referred to their enclosed area as the 'backyard'. A further thirty-three percent referred to it as the 'yard'. The name 'front lawn' was volunteered by the remaining nine percent.

Suitability for Use

In answer to the open question "What is the main feature of this area that makes it suitable, (or otherwise), for the way you use it"? the following spread of information was generated.

Table 10. Suitability of area for use in El Rio.

	%		%
Security related	6.7	Size	33.3
Sensory related	13.3	Activity	13.3
Functional	20.0	Enclosed	13.3

Satisfaction

This was another open question which was coded in a similar fashion to question twenty, above.

Table 11. Qualities contributing to satisfaction in El Rio.

	%		%
Privacy	26.7	Size	26.0
Sensory related	20.0	Activity	6.7
Security related	13.3	Enclosure	6.7
Functional	6.7	Enclosure	6.7

Privacy

Respondents were asked to indicate how important Landscape Privacy was to them on a scale of zero to ten. A dotted line was employed, with numbers inserted at regular intervals. Beneath the zero were the words 'Not important', beneath the ten, 'Vital'. The replies were widely spread. See Table 12.

Table 12. Importance of landscape privacy in El Rio.

	%
0 importance	12.5
5 on the scale	6.3
6 on the scale	25.0
7 on the scale	6.3
8 on the scale	6.3
9 on the scale	6.3
10 on the scale	37.5

Rosemont

Perceived Function

Walls and fences can perform various functions to a certain degree. They may keep intruders out, children and pets in, cut off an ugly view and offer privacy. In the Rosemont neighbourhood the general opinion is that they can do certain things better than others. Forty-four percent of the respondents felt that landscape walls and fences are generally more important for privacy. Thirty-six percent felt that they were more important for keeping children and pets inside, eight percent felt that they provided a barrier to keep intruders out, four percent named cutting off an ugly view and eight percent felt that they were generally more useful for some other purpose.

Function as Related to Income

In correlating the income of the respondents with their perception of barrier function it appears that those with incomes in the $10,000 to $19,999 range are more concerned with security factors. Those in the $20,000, to $35,000 range show equal interest in privacy and the security value of barriers for keeping children and pets inside. This holds also for those groups answering 'area average' and over $50,000 per annum. For data see Table 13.

Table 13. Function related to income in Rosemont

	%	%	%	%	%
Over $50,000	0	50.0	0	50.0	0
$35,000-$49,999	0	0	0	0	0
$20,000-$34,999	0	41.8	8.6	49.6	0
$10,000-$19,999	14.3	43.83	0	14.3	28.6
Under $10,000	50.0	0	0	50.0	0
	Intruders	Children	Aesthetics	Privacy	Other

Location

In seventy-eight percent of the homes surveyed the enclosed area is located at the rear of the home. In thirteen percent the enclosed rear area is continued around the sides. Four percent are located at the front and four percent at the side. One additional home has an entry patio which is used for dining but was not selected as the preferred area and is therefore not included in the survey.

Of the homes surveyed eight percent have no enclosed area. However, this figure is composed of those that are either in a temporary state of disrepair, or that are in the process of being built. They were not considered to currently fulfill any of the security, aesthetic or privacy functions.

Nomenclature

Names volunteered for this open question were, Patio at nine percent, Backyard at eighty-three percent, Yard at four percent and Front Patio at four percent.

Suitability for Use

Responses to this question were varied but did cluster around three chief categories, Privacy, Sensory related and functionally related. See Table 14, below.

Table 14. Suitability of area for use, Rosemont.

	%		%
Privacy	18.2	Size	4.5
Sensory	22.7	Activity	4.5
Functional	31.8	Enclosed	4.5
Security	4.5	Ownership	4.5
Privacy+Sensory	4.5	Privacy+Sensory+Functional	4.5

Satisfaction

Question twenty-two was designed to elicit the type of perception natural to the respondent which would aid in development of a personality profile. This open question "What is it about your enclosed space that gives you most satisfaction" elicited widely varying responses. Reasons

cited were such that they could be assigned one of several categories. Functional, aesthetic, sensory, privacy related, etc. In Rosemont, the only cluster was that occuring in the 'sensory related' category which included thirty-nine percent of the replies. Privacy, the second most quoted, stood at thirteen percent. The rest of the responses spread fairly evenly across the range.

Relationship of Landscape Style to Satisfaction

Eighty percent of those offering sensory related answers to question twenty-two had an 'eastern traditional' garden style. The remaining twenty percent with sensory answers possessed 'oasis' style gardens. Interesting.

Also eighty percent of those with 'eastern traditional' gardens gave sensory answers, ten percent offered sensory plus privacy answers and ten percent named 'ownership'. 'Oasis' responses were splity fifty/fifty between sensory and privacy answers. The rest of the answers were too widely spread to offer any significant correlation.

Privacy

It is interesting to note from the data that once an income of $20,000 is reached then there is an increase in the importance of privacy. This holds true for both questions directly related to privacy. in question twelve,

the average ranking of the importance of privacy on a zero to ten scale is 8.8 in those with incomes over $20,000 and 6.5 in those between $10,000-$19,999. This is borne out by answers to question two. The total percent of respondents in income brackets over $20,000 per annum is sixty-five. However, of those answering 'privacy' as the generally most important function of walls and fences, eighty-one percent are in income brackets over $20,000 per annum.

Comparison of Data

Function

The function of landscape barriers was perceived to be 'keeping intruders out' in fifteen percent of El Rio respondents and eight percent in respondents from Rosemont. 'Keeping children and pets in' was noted by fifty percent from El Rio and thirty-six percent from Rosemont. 'Privacy' was named by thirty-five percent in El Rio and forty-four percent in Rosemont. The data from both neighbourhoods shows the same internal pattern. There is an equal split between 'children and pets' and 'privacy' in the $20,000-$34,999 range and a wider range of concerns in the two lower income ranges.

Location

There was a difference in the location of the enclosed area between the two neighbourhoods. El Rio showed

twenty percent lacking enclosure compared with eight percent in Rosemont.

Thirty-eight percent of the El Rio homes had the total property enclosed. This did not occur in any homes surveyed in Rosemont.

While the great majority of units from both neighbourhoods had the enclosed area located to the rear of the home Rosemont had a few that were found either to the front or the side of the building.

Nomenclature

Seventy-one percent of all respondents referred to the enclosed area as 'backyard', for nineteen percent it was 'yard'. The remaining ten percent was divided between 'patio', 'front patio' and 'front lawn'.

Suitability for Use

This was a widely spread category in both neighbourhoods. Size, 33.3 percent, and functional, 20.0 percent figured most prominently in El Rio. In Rosemont, functional qualities were listed by 31.8 percent, sensory by 22.7 percent, and privacy by 18.2 percent.

Satisfaction

Answers to the question "What is it about your enclosed area which gives you most satisfaction?" showed a wide range of replies in each neighbourhood. Size, 20.0

percent, Sensory, 20.0 percent, were most prominent in El Rio, and Sensory, 39.0 percent, and Privacy 13.0 percent were most named in Rosemont.

Privacy

In comparing data obtained from the landscape privacy scale it is seen that El Rio had a greater percentage of replies in both the highest and the lowest possible rating numbers. However, Rosemont has a greater percent of respondents, overall, in the upper ranges. See Table 15.

Table 15. Comparison of neighbourhood replies on the landscape privacy importance scale.

%	%	%
0	12.5	4.3
1	0	0
2	0	0
3	0	0
4	0	4.3
5	6.3	21.7
6	25.0	0
7	6.3	4.3
8	6.3	21.7
9	6.3	13.0
10	37.5	30.0
	El Rio	Rosemont

Pearson Correlation Matrix

Within each neighbourhood a correlation could be seen between various design elements and satisfaction or use of the area. However, there was very little overlap. A strong correlation of one factor with another seen in El Rio rarely showed the same correlation in Rosemont.

Design implications and suggested areas of research will be examined in the following, and concluding chapter.

CHAPTER 9

CONCLUSION

There have been three research methods employed in preparing this thesis. Archival research into the background of the people/environment interaction offered some pertinent information regarding privacy and its cross-cultural manifestations. Further archival research traced the development of the courtyard garden which is one of the most sheltered and private of personal landscapes. It evolved from this section of research that the courtyard is an ideal solution to several problems. Chief among these are problems of climate and population density. A severe climate is tempered by walls high enough to cut wind and provide shade. Courtyard housing also offers a solution to high population density conditions by providing places of privacy and retreat. See page 27. Archival research was also used to establish the demographical background of the sample neighbourhoods.

The second method employed was that of an aerial survey to establish the location and materials of landscape barriers in two selected neighbourhoods. This was funded by the Graduate Student Development Fund and proved to be a very fruitful source of information.

The aerial survey provided some solid, objective and verifiable data. It appeared to this researcher to be a most valuable tool for establishing a background of facts. It was through the aerial photographs that the following facts were established.

Table 16. Summary data from aerial photographs.

	%	%
Open	31.4	8.27
Privacy	52.5	88.33
Walls	24.7	51.28
Link+mixed w/link	46.5	11.68
	El Rio	Rosemont

These data are indicative of a higher provision for landscape privacy in the Rosemont neighbourhood.

There is not a simple answer which accounts for the prevalence of chain link fencing in El Rio. It is undoubtedly a break with the hispanic tradition of enclosing the outdoor space with walls high enough to form a roof line. It has been noted that traditionally in Mexico these walls

are created first and the dwelling unit is built within them afterwards (Jones, W. 1984).

This ethnic building style of homes which front directly onto the street and have an enclosed courtyard to the rear prevails throughout Mexico, although other methods of establishing boundaries and enclosing the property may be seen. As for example in Guaymas, where any material that comes to hand is used.

So, before the question of El Rio is examined it should be noted that in Mexico, also, chain link fencing may now be seen where it never was before. In border towns, and up to two hundred miles inland, the chain link invasion makes a strong showing (Personal Communication-Fernando Avila 1984). This then is the first factor involved, that, even in the same culture, changes take place.

Secondly, the changes are often associated with a rise in the standard of living. This in turn is connected with an increase in industry. Associated with this is the mass production of new materials of which chain link fencing is an example, and transportation, which makes these new materials locally available. Mass production also lowers prices. This enables people, who before may have enclosed their properties with anything that came to hand, such as planks, old doors, packing cases and junked cars, to replace them with a uniform barrier material.

An Hispanic population has been established in Tucson since 1776. However, since the Gadsen purchase in 1853 the population of Tucson has become increasing Anglo. So that although early building styles reflected the Hispanic heritage it has had increasingly less influence as time goes on. Since World War II the vast majority of building has been in the Anglo tradition. Since most of the building contractors are of Anglo heritage they tend to build in the style they are used to, for the benefit of the larger Anglo population. There have been exceptions to this and with the development of a regional awareness the proportion may well increase. However, in the recent past what has been built are Anglo tract homes. When a Hispanic looks to buy a home these are what are available. Most homes in El Rio are of this type.

So a break in tradition has already occurred when the house is acquired first and the barriers are erected second. Tradition is maintained when the Hispanic property owner chooses to enclose the total property. It is broken again when the choice of materials is a manufactured product such as chain link fencing. Essentially, the neighbourhood of El Rio reflects one step in a process of change which affects us all.

One of the questions raised in the thesis has been the effect of changing density conditions upon people's perception

of a need for landscape privacy. In comparing the two neighbourhoods El Rio is seen to have a population density of less than one person per acre. In Rosemont this figure stands at seven persons per acre. Table 16 shows that homes in Rosemont have both a higher percentage of homes that have an enclosed outdoor space and that a high proportion of the barriers used to form the enclosure provide for landscape privacy. See a repeat of Table 16 below.

Table 16. Summary data from aerial photographs.

	%	%
Open	31.4	8.27
Privacy	52.5	88.33
Walls	24.7	51.28
Linked+mixed w/link	46.5	11.68
	El Rio	Rosemont

When taken in conjunction with the archival information that El Rio has a population density of less than one person per acre where Rosemont has seven persons per acre, it is suggestive of a correlation between density and landscape privacy provision.

Furthermore, Rosemont has a higher average income than El Rio. When taken together this appears to substantiate the stated hypothesis of the thesis. That is, "With the increasing wealth of the American middle class, emphasis on privacy, particularly landscape privacy is on the increase in urban and suburban population areas, due to increasing density conditions".

The third method, that of a questionnaire, shows evidence that there is overall more interest in privacy in the more wealthy neighbourhood of Rosemont. When the two neighbourhoods are examined internally it is seen that this correlation between income and the importance of landscape privacy, as indicated on the questionnaire is still in effect. See Table 17 below.

Table 17. Percentage of scores over 5 on the privacy scale.

	%	%	
Over $50,000	0	100	
$20,000-$34,999	100	80.0	
$10,000-$19,999	40	100	(note)

The $35,000-$49,999 category is not listed since there were no respondents in this income bracket.

The 100 percent figure in the lowest income bracket for Rosemont was obtained from students and retired persons. These people either have had, or expect to have, a higher income level. This fact is likely to colour perceptions and expectations.

Design Implications

Data was obtained from the questionnaire which has implications for the design of personal, or residential, landscapes.

Firstly, that privacy is an important factor to consider for all income groups and very important with higher income groups.

Secondly, the height of landscape barriers is directly correlated with satisfaction and enjoyment. Those surveyed who had barriers of four to five feet or lower, used and enjoyed their personal landscape less than those with barriers of six feet or more.

Persons in this study with high sensory awareness, as determined from their answers to two of the questions, also had either 'Eastern traditional' or 'Oasis' landscape styles. This is very interesting since these styles have a richness in colour and texture derived from plant material. It would appear that this might be the subject of further research. Especially if the research involved identifying

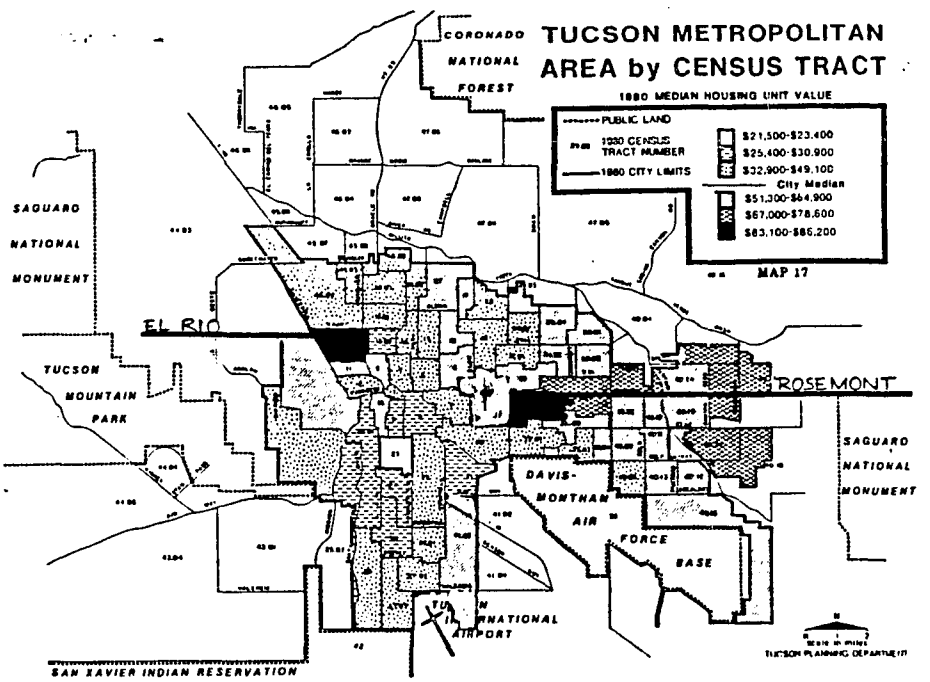
drought tolerant plant materials with the same sensory effect. This finding may also be related to research in Landscape preferences.

Another suggested line on research involves the fact that residents of El Rio used their outside landscape as additional living space for dining and entertaining which was not predicted after the aerial survey, but used it without many of the design elements or accesories employed in the Anglo neighbourhood of Rosemont. There was, however, a high proportion of overhead shade structures present in El Rio.

If the number of design elements, or the existance of specific design elements, could be shown to correlate with a scale of satisfaction these elements could be emphasised in the designing of future areas. The correlation matrix prepared from the questionnaire data indicates that this could be done but that a larger data base is needed.

APPENDIX A

MAP OF TUCSON SHOWING
NEIGHBOURHOODS STUDIED



Aerial Survey Data: Tabulation Sheet

	w/pool	w/RV	w/oRV	w/ neither	total
Rear perimeter walls					
Rear perimeter link					
Rear perimeter fencing					
Rear perimeter planting					
Rear perimeter open mixed					
Rear perimeter closed mixed					
Rear perimeter closed w/link					
Subperimeter interior walls					
Subperimeter link					
Subperimeter fencing					
Subperimeter planting					
Subperimeter cl. mixed					
Subperimeter cl. mixed w/link					
Perimeter plus I interior walls					
Perimeter plus I fences					
Perimeter plus I link					
Perimeter plus I planting					
Perimeter plus I mixed					
Perimeter plus I mixed w/link					
2 or more interior walls					
2 or more interior fencing					
2 or more link					
2 or more planting					
2 or more mixed					
2 or more mixed w/link					
Unknown-heavy planting					
Open					
Front privacy walls/fences					
Front privacy planting					
In ground pool					
Above ground pool					
House courtyard					

APPENDIX B

AERIAL SURVEY DATA

EL RIO

AERIAL PHOTOS
14.26 15.26 16.26
14.27 15.27 16.27

Total # Res. Units	Walls	Fencing	Link	Planting	Cl. Mixed	Mixed W/Link
Boundary Const. Only	53	18	46	0	41	60
Assoc. W/Pool	1	1	0	0	1	1
Assoc. W/RV &/or Utl.	0	0	0	0	1	0
	54	19	46	0	43	61
Sub Boundary Only	4	1	5	1	1	1
Assoc. W/Pool	0	0	0	0	0	0
Assoc. W/RV &/or Utl.	0	0	0	0	0	1
	4	1	5	1	1	2
Boundary Plus Sub Bound	2	1	1	1	0	0
Assoc. W/Pool	0	1	0	0	0	0
Assoc. W/RV &/or Utl.	0	1	2	0	0	0
	2	3	3	1	0	0
Boundary Plus Sub Bound + Additional Subdivision	1	1	1	1	1	1
Assoc. W/Pool	0	1	1	1	1	1
Assoc. W/RV or Utl.	0	1	1	1	1	1
TOTAL	61	23	54	2	44	63

Total # Units	366	100%	Total # Enclosed Units	247	
Total # Enclosed Units	247	67.5%	Total # Walls	61	24.7%
Total # Open Units	115	31.4%	Total # Fencing	23	9.3%
Unknown Heavy Planting	4	1.1%	Total # Planting	2	.8%
			Total # Link	54	21.9%
Total # Enclosed	247		Total # Mixed	44	17.8%
# Enclosed W/Privacy	130	52.5	Total # Mixed W/Link	63	25.5
# Enclosed Without Privacy	117	47.3			
Assoc. W/Pool,RV & Utl.	10	.2			

FUNCTION MATERIALS

ROSEMONT

AERIAL PHOTOS
28.22 29.22
28.23 29.23

	Walls	Fencing	Link	Planting	Mixed	Mixed/W Link
Boundary Const. Only	229	59	22	28	137	39
Assoc. W/Pool	44	7	0	0	24	3
Assoc. W/RV or Utl.	0	0	0	0	0	0
			-17-			
	273	66	39	28	161	42
Sub Boundary Only	98	16	5	0	5	1
Assoc. W/Pool	12	4	3	0	3	0
Assoc. W/RV or Utl.	7	0	1	0	0	2
	117	20	9	0	8	3
Boundary plus Sub. Bound	8	7	0	11	1	0
Assoc. W/Pool	3	0	1	0	0	0
Assoc. W/RV or Utl.	0	2	1	0	0	1
	11	9	2	11	1	1
Boundary plus Sub. Bound plus Addit. Subdivision	19	0	0	0	1	0
Assoc. W/Pool	2	0	0	0	0	0
Assoc. W/RV or Utl.	0	0	0	0	0	1
	21	0	0	0	1	0
TOTAL	422	95	50	39	171	46
Assoc Pools 106						
Assoc RV & Utl. 14						

Total # Units	955		Total # Enclosed Units	823	51.28
Total # Enclosed Units	823	86.18%	Total # Walls	422	51.28%
Total # Open Units	79	8.27	Total # Fencing	95	11.54%
Unknown Heavy Planting	53	5.55	Total # Planting	39	4.74%
Total # Enclosed	823		Total # Link	50	6.08%
#Enclosed W/Privacy	727	88.33%	Total # Mixed	171	20.78%
#Enclosed WO/Privacy	79 -17-	11.64%	Total # Mixed W/Link	46	5.59%
#Assoc. W/Pools,RV or Utl	120	14 58%			

APPENDIX C

QUESTIONNAIRE

1) This questionnaire source is
   1) El Rio
   2) Rosemont.

2) Do you feel that fences and walls are generally more important for
   1) keeping intruders out
   2) keeping children and pets in
   3) cutting off an ugly view
   4) offering privacy
   5) other?

3) Do you have an area of your yard that is fully enclosed?
   1) yes
   2) no

   [If yes, proceed with question number 6. If no, proceed with question number 4.]

4) Is there a reason that you do not have walls and fences around your home grounds?
   1) don't like enclosed yards
   2) never thought of it
   3) don't see any need
   4) like to but it costs money

5) other reason (note separately).

Since I do not have a record of your name or address, I hope you will not object to answering the following question. It is important to the study results.

5) Which of the following categories most accurately describes the combined income for the home. [Show card]

1) less than $10,000

2) $10,000-$20,000

3) $20,000-$35,000

4) $35,000-$50,000

5) over $50,000

6) prefer if you put me down for the area average.

6) Is this area in the part of the yard

1) facing the street

2) on the side of the house

3) at the back of the house

4) back and sides

5) total property?

7) What is the approximate area of the enclosed space? [See coding page 3. If more than 1 enclosed space, refer to preferred space.] What is the approximate height of the enclosing walls/fences.....

8) Directly opposite the door from the house (or entry to area?

9) To the left of the door from the house (or entry to area)?

10) To the right of the door from the house (or entry area)?

11) What do you call this enclosed space? (open for coding see page 3.) Do any of the following activities take place in this space?

12) Active recreation?
1) yes
2) no

13) Large scale entertaining?
1) yes
2) no

14) Intimate or family dinners?
1) yes
2) no

15) Quiet pastimes?
1) yes
2) no

16) Other?
1) yes (please specify)
2) no

17) Is this area directly accessible from the house?
1) yes
2) no

18) How much does ease of access or the lack of it affect your use of the area?
1) not at all
2) some
3) a lot

19) Do you feel that the layout and design of this area is suitable for the way you use it?
1) yes
2) no
3) partially
4) do not use it

20) What is the main feature that makes this area suitable or otherwise? [Open, for coding see page 6.]

21) What style would you say best describes this area? [Show card with definitions:]

1) Eastern traditional
2) formal
3) Oasis
4) Spanish/Mediterranean
5) Desert
6) Southwestern
7) Mongrel
8) other (please specify)
9) don't know.

21b) If Southwestern, what is description? (Not for computer.)

22) What is it about your enclosed area that gives you most satisfaction? (Open, for coding see page 6.)

23) Which of these photographs appeals to you most?

1) a
2) b
3) c

24) Would you rank the photographs with the one having the most empty space as number 1, the next as number 2 etc.?

1)
2)
3)

25) Which photograph is closest to the space/mass ratio of your own area? (a)

(b)

(c)

26) Please indicate how important Landscape Privacy is to you on the following scale:

0...1...2...3...4...5...6...7...8...9...10

Not important vital

I have here a checklist of design elements. Could you tell me any that are present in the enclosed area we have been discussing.

27) Childrens play gym
28) Dining area
29) Built in BBQ
30) Portable BBQ.
31) Sep. storage shed
32) Dog run
33) Inground swimming pool
34) Above ground swimming pool
35) Overhead shade structure
36) Level paved area
37) Built in seating
38) Portable seating
39) Lawn
40) Shade
41) Shrubs
42) Ground cover (not grass)
43) Wall vines
44) Raised planting bed/s
45) Flowers
46) Container plants

Since I do not have a record of your name or address, I hope you will not object to answering the final question. It is important to the study results.

47) Which of the following categories most accurately describes the combined income for the home? [Show card.]

1) less than $10,000
2) $10,000-$20,000
3) $20,000-$35,000
4) $35,000-$50,000
5) over $50,000
6) put me down for the area average.

Coding for question 7.

1) under 200 sq. ft.
2) 200-500 sq. ft.
3) 500-1000 sq. ft.
4) 1000-2000 sq. ft.
5) 2000-4000 sq. ft.
6) 4000-6000 sq. ft.
7) Over 6000 sq. ft.

Coding for question 11.

1) Patio
2) Courtyard
3) Back yard
5) Yard
6) Front patio
7) Front lawn

Coding for questions 20 and 22.

1) Privacy related
2) Security related
3) Sensory related

4) Functional

5) 1 + 3

6) 1 + 3 + 4

7) Size

8) Action

9) Ownership

10) Enclosed

Landscape Style Descriptive Card

Eastern traditional	Open, informal, lawn trees, flower beds
Formal	Geometric, defined edges, in planting and paving.
Oasis	Small, green, lush, large foliaged plants.
Spanish/mediterranean	Tiles, paving, color, clay pots.
Desert	Informal, sparsely planted, drought tolerant plants, sand, decomposed granite.
Southwestern	no description
Mongrel	no description
Other	no description
Don't know	no description

APPENDIX D

QUESTIONNAIRE SURVEY DATA

The Percentage of Respondents Having Specified Design Elements Present in Enclosed Area

Children's play gym	20.0	26.0
Dining area	37.5	56.5
Built-in BBQ	18.8	21.7
Portable BBQ	40.0	65.2
Sep. storage shed	75.0	52.2
Sep. dog run	6.7	13.0
I.G. swimming pool	0	21.6
A.G. swimming pool	0	0
Level paved area	75.0	78.3
Built-in seating	0	21.7
Portable seating	50.0	69.6
Lawn	50.0	82.6
Shade trees	81.3	65.2
Shrubs	67.5	100.0
Ground cover	0	26.1
Wall vines	37.5	47.8
Raised plant beds	20.0	13.0
Flowers	31.3	78.3
Container plants	68.8	73.0
	El Rio	Rosemont

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