Northumbria Research Link

The Dilemma of Saudi Arabian Homes in Riyadh

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Abstract

The courtyard form of the traditional Arab house responded to both climate and the culture of its inhabitants. Islamic values, as well as socio-economic factors, played crucial roles in the design. However, the mid-20th Century marked the beginning of Saudi Arabia's first rapid economic growth as a result of the discovery of oil; which dramatically increased the wealth and prosperity of the population, and resulted in new lifestyles. This period witnessed the introduction of the grid layout street pattern and the detached villa house. This type became the prevalent style in Saudi Arabia, the central province, and Riyadh in particular. While the traditional courtyard house more than satisfied cultural needs, increasingly it was viewed inappropriate for affluent 21st Century lifestyles. Yet, this research confirmed that the villa style is creating fundamental problems for Saudi families, largely for its inability to relate to the indigenous culture. The theoretical framework is set in sustainability theory, and investigates the principles of home; through human needs, place and house. The methodology uses a survey strategy with questionnaires, interviews and building analysis to determine which aspects of home are satisfied by each type. The dilemma is that Saudi families will not return to the courtyard type, because it does not meet important requirements such as status, whereas the villa type does not meet significant criteria such as privacy. The context is increasing climatic temperatures, which are making both types increasingly uncomfortable. This study highlights the need for a specific contemporary home style that would satisfy 21st century aspirations, respect Islamic culture, and respond to changing climate.

1.0 Introduction

The mid - late 20th Century marked a period of rapid economic growth in Saudi Arabia, as a result of the discovery of oil (Eben-Saleh, 1998). It dramatically increased the wealth and prosperity of the population, resulting in new lifestyles (Bahammam, 1998). This change promoted internal migration from villages to major cities in search of a better life, creating a massive increase in housing demand. The capital city of Riyadh was the most affected by the rural to urban migration. The huge influx forced the state to begin providing new infrastructure and roads (Al-Ibrahim, 1990) through a policy of demolishing parts of the old neighbourhoods and traditional houses (Eben-Saleh, 1998). In addition, government programmes such as providing free plots of land plus long-term interest-free loans to Saudi citizens were key factors that made it possible to build more and bigger houses (Bahammam, 1990). The State adopted the modern villa style and grid pattern for development in Riyadh and subsequently in all the cities in the Kingdom (Al-Hathloul, 1981). The old compact, pedestrian-orientated, high density and mixed use urban environments gave way to car-based neighbourhoods with lower density and zoning by function. Overseas planners and constructors came, built and departed. Intensive coverage of western lifestyles and the booming economy brought the dream of an easier life. People desired the kind of houses they saw in the films, magazines and on television. Thus, despite the common sense approach of traditional courtyard house design, residents increasingly viewed it as connected to a past that they did not wish to revisit. Yet, in contrast to the apparent contentment, evidence is starting to appear that residents are not totally satisfied with these new houses; as windows begin to be blocked-up and high fences built between the houses. There is also a notion that families are becoming isolated within their own homes. This paper will investigate how the people of Riyadh are responding to the changes in houses and neighbourhoods. It will be based on a theoretical framework that analyses the principles of home through sustainability. A major issue is the human needs of families. These involve a number of aspects, and there will be an evaluation of which features of the house types match the characteristics of human needs. Emotional engagement is derived from creating a sense of place. Home is where the physical nature of the house and its neighbourhood satisfy human needs and generate a sense of place. Residents will be surveyed and interviewed about satisfaction with their homes to identify specifically what is favoured in each house type. Finally, there will be an appraisal of whether it is possible to overcome emergent areas of dis-satisfaction through design proposals.

Therefore the objectives of the study are as follows:
- To investigate the concepts of home.
- To demonstrate the nature of courtyard houses and villas.
- To explore the extent of residents' satisfaction.

- To identify features that should be included in the layout and design of houses to meet residents' needs.

2.0 Sustainability Theory

The essence of sustainability theory can be found in the Brundtland Commission's statement on meeting current human needs without compromising the ability of future generations to meet their own needs. For a practical application of sustainability, respect must be shown for what connects communities to place. According to Scammon (2012), the concept of place denotes a community's culture and should be included in applications of sustainability theory. Culture connects people to place through identity and values, and the continuance of that culture is one of the major objectives. Hawkes (2011) asserts that a healthy society depends on lively and influential cultural activities. Therefore, they function as a catalyst for sustainability. Zhang (2013) argues that the house has traditionally acted as a container for cultural activities, festivities and rituals. Rapoport (1969) identifies that the term home brings these aspects together as a symbol of comfort, identity, dreams, and aspirations. He emphasises that the satisfaction of human needs is the first factor in shaping a home. Place relates to dwelling in terms of individual identity, and house requires appropriate forms and spaces.

2.1 Human Needs

The hierarchy of human needs originated with the work of Maslow (1954). It starts with physiological requirements and moves up to psychological requirements. When interpreted in terms of home, the hierarchy can be expressed as: shelter, safety, security, privacy, status and aesthetics. Where all these needs are satisfied the residents should find self-fulfilment. It has been argued that technological advancement has produced routine protection from the climate. However during the 21st Century, increasingly extreme climates are occurring, especially as a result of global warming (Barros and Field, 2014). Safety of the residents, and security to safeguard their property, are fundamental to the experience of home. Among others, Fried (1970) and Rachels (1975) point out that privacy is necessary to achieve intimate relationships. As defined by Matthews (2008), it is morally important for two reasons. First, privacy enhances autonomy and individual dignity. Secondly, it consists of the ability to manage access to one's person by providing a barrier between the public domain and the person. In terms of status, Maslow (1954) asserts that everybody has a desire for self-respect, self-esteem, and for the esteem of others. With regard to aesthetics, each resident has a specific level of ability that enables him or her to distinguish beauty (Danaci, 2012), and the perception of being surrounded by beauty enhances self-esteem. Uzunoglu (2012) argues that unpleasing forms, shapes and styles of architecture create disordered built environments that have negative psychological effects on inhabitants.

2.2 Place

The literature recognises that three related concepts in particular, capture people's experience of, and emotional engagement with place. These are - attachment (Low, 1992), identity (Proshansky et al., 1983) and sense of place (Hay, 1998a). Most researchers agree that place and its meanings are created in a complex manner and involve a variety of interconnected variables (eg Relph, 1976; Tuan, 1977). Place attachment is a positive bond to physical and social settings (Moore and Graefe, 1994) and several authors note that it grows with time (eg Low, 1992). Place identity is defined as an emotional constituent. It is fundamental to human life and integral to place making, which in turn enhances the values of people who use a place. The notion of dwelling is an expression of place identity, in which residents feel comfortable and secure, and find enjoyment (Oswald and Wahl, 2005). Sense of place is a primary measure of human relationship with a spatial location and thereby gives it special value (Hay, 1998b). Therefore, without a thorough understanding of a location, it would be difficult to identify why a particular place is special (Relph, 1993). People demonstrate sense of place by applying their moral and aesthetic judgement to locations. Place can express people's experiences and aspirations; and becomes significant due to the interaction of various attributes, such as activities, traditions, social ties, and length of association (Low, 1992). It is encouraged by daily encounters with the locality and neighbours, seasonal celebrations, sustained physical personalisation, and warm feelings about the community (Werner, Altman, Brown and Ginat 1993). Family, neighbours, celebration and community can all be expressions of symbolism. The recognition of place requires a dynamic perspective - one that emphases people's on-going and evolving relationships. It has been termed as dimensions of self that develop in relation to the physical environment (Proshansky, 1978). Place can convey a sense of belonging to a community (Relph, 1976). People and place can have strong connections and achieving these connections is necessary for generating meaningful domestic environments.

2.3 House

Researchers have identified the non-emotionally based aspect of house, which can be characterised as a physical unit with distinct spaces for its residents, and a structure separating private from public domains (Rapoport, 1995). Therefore, as Le Corbusier (1923) points out, a house can be interpreted as merely a machine for living in, as it may lack psychological significance for individuals (Dovey, 1985). It is an artefact that may also provide investment returns and other financial benefits through ownership. The form of houses presents a complex picture, although the principal differentiation is between those that are joined together in an urban composition and those that stand separate from one another. Thus, they are recognised by architectural types e.g. detached, semi-detached, and terraced, which create different spatial patterns in a neighbourhood. Access to a house is across the threshold i.e. entrance or access from the street, which serves to define territory. This threshold varies in different cultures and periods, and in some houses, users may enter through a hierarchy of spaces. Front and back help to differentiate formal and informal visiting patterns, and the entrances could be used for separate functions or categories of people (Rapoport,

1969). A house is essentially for the provision of activities, where each space may have a specific function e.g. living, sleeping, cooking, bathing, entertaining and storing (Rapoport, 1990). The spaces can be cellular, where each activity is allocated a separate space, or open plan where a number of different activities occur in a single space (Hanson, 1998). This internal arrangement is about responding to relationships. Yet, a house is more than simply space. It has a physical form that can be characterised by features such as length, width, scale, geometry, texture, colour and light. It is constructed from building materials, which might be described as warm, cold, creative or bland (Rapoport, 1969). A building constructed of natural materials e.g. mud, wood and stone evokes completely a different character to man-made materials e.g. concrete, steel, and glass. The notion of house is related to performance attributes e.g. fitness for purpose, building utilisation, temperature, ventilation, illuminance, sound, energy utilisation, and buildability which affect the operational efficiency of the building. Although fulfilment of these performance attributes is essential, they are lower orders of design aspiration (Giddings *et al.,* 2013). The study of house is significant as it helps in understanding that physical characteristics are important as they afford different options for people and therefore impact on the quality of life.

2.4 Home
Home in this sense does not mean simply to build a house, but to dwell and create a complete environment to which its residents are attached. It is defined by the way people make their world meaningful (Heidegger, 1962). Home may have symbolic and latent value that is internalised by its residents (Rapoport, 1995). It offers psychological reassurance as well as satisfying physiological needs. Seminal writings on the concept of home (e.g. Dovey, 1985) provide knowledge regarding the human-environment relationship. Alexander (1979) emphasises that domestic built environments connect individuals to their surroundings in an infinite number of ways, most of which are subconscious. For this reason, it is significant to determine what works, what feels pleasant, what is psychologically beneficial, and what appeals. Thus, home should incorporate a wide variety of personal values - such as aspiration, motivation, physical well-being and lifestyle choices (Feldman, 1990). Home is a complex, multi-faceted and multi-layered concept, where different connotations can occur interchangeably and/or simultaneously. It is not merely a place to live, it is a way of weaving life into particular geographic space and in this way, it is observed as a holistic entity comprising three inter-related qualities of people, environment and time. Home transcends the material characteristics of domestic space. It is not neutral space but fulfils a role as the setting for social relationships. It offers its inhabitants comfortable spaces, but also spaces where they can bring a sense of order to their lives. Home is identified as place, in which people can be more themselves than in any other space (Dovey, 1985). Furthermore, the residents give a sense of identity to the place they call home and they draw their identity from it. Finally, home also has to be a physical entity i.e. a house where people undertake their daily activities. This study recognises home as a place that provides an inter-play on a variety of levels of

experience from personal to cultural. It is also clear that an appropriately designed domestic environment has many benefits for its dwellers, improving their quality of life and maximising physical and mental health (Kyle and Dunn, 2007). The principles of home are summarised in Figure 1.
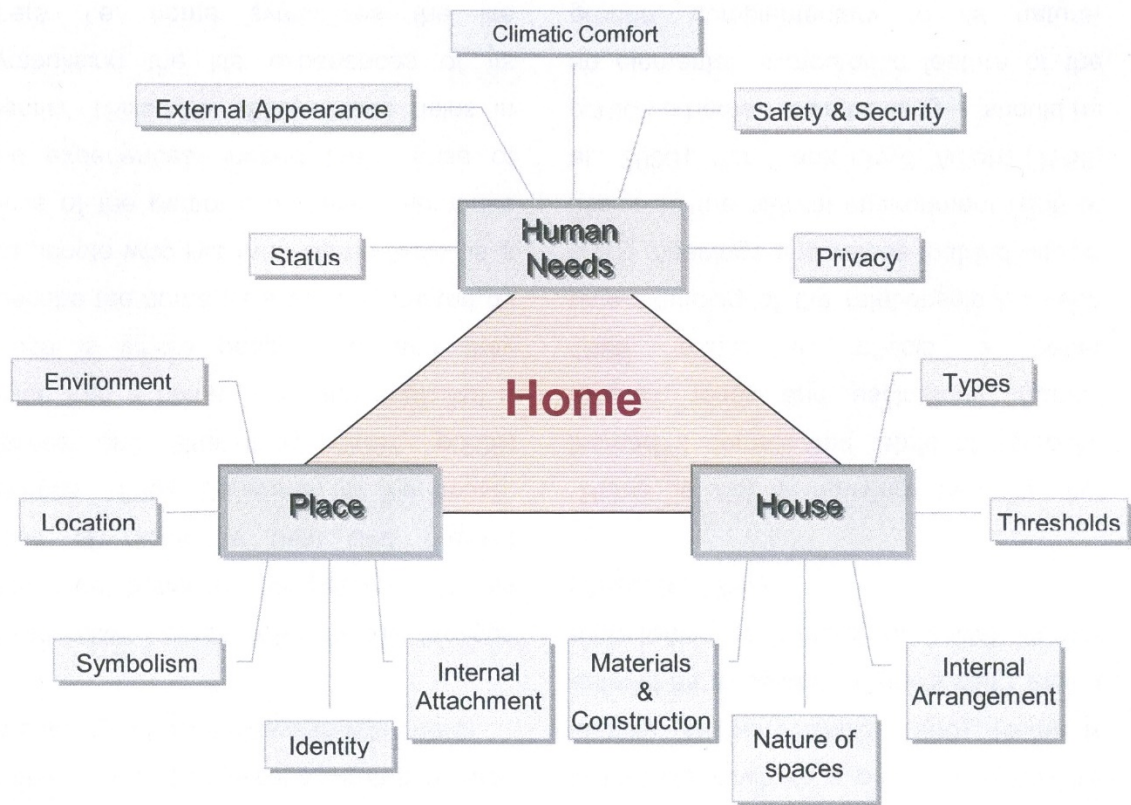
Figure 1. The Principles of Home

3.0 Project Background

Saudi Arabia occupies the greater part of the Arabian Peninsula, with an area of 2,149,790 km^2. It extends from the Red Sea in the west, to the Arabian Gulf in the east - from Jordan, Iraq and Kuwait in the north to Yemen, Oman and UAE towards the south. Turkustani (2008) notes that the country is represented by four principal geographic provinces – western, southern, eastern, and the central province (see Figure 2).

Figure 2. Saudi Arabia and its Provinces

The central province has been selected for this study. It is focussed on Riyadh, the most populated and fastest developing city, as well as being the capital of the Kingdom. Eben-Saleh (2001) points out that the desert climate of this province is clearly evident in the time-honoured urban fabric of the city. It was characterised by compact urban patterns, narrow winding alleyways, and cul de sacs; which were used to deter intruders, create communities, engender privacy, and minimise the effects of dust storms and impact of the hot sun. Talib (1984) explains that the external expression of the houses was typified by a low number and small size of external openings, which reduced the impact of the hot and dry climate on the internal spaces of the house. Bahammam (1998) adds that the courtyard has played a key role in the traditional house, in terms of the multiplicity of functions in an open private space where the family could engage in activities such as celebrations, meetings and other events; in addition to creating a safe place for children to play their games. The courtyard, which provided light and natural ventilation, also had the role of regulating temperature inside the house by providing shade in the daytime and preserving cold air at night, to cool the building during the following day (Al-Sayed, 2011).

The origin of contemporary residential settlements stems from when Aramco (Arabian-American Oil Company) built its housing projects in the eastern region of Saudi Arabia between 1938 and 1944 (Shiber, 1967; Elsheshtawy, 2011). These projects

introduced a new concept of space and a new home image. This early intervention had a deep but not immediate effect on the people. Kimball (1956) notes that the company's senior staff were completely imported from the United States. He observed an area of single storey family houses. Each house was surrounded by a grassed margin, usually enclosed by a hedge. This new spatial concept contrasted strongly with the traditional home environments (Al-Naim, 2016). By 1947, the Government had taken advantage of the American Engineers and Surveyors employed by Aramco to create the first planned areas in Saudi Arabian cities following a grid iron pattern (Al-Hathloul, 1981). Local people also engaged them to design their new houses as there were few architects in Saudi Arabia. They were all detached houses (Al-Hathloul and Anisur-Rahmaan, 1985).

In 1953, King Saud succeeded his father and decided to modernise Riyadh. The process of modernisation was greatly imitative of western models (Jarbawi, 1981). This created confusion between modernisation and westernisation in Saudi society. By the end of the 20th Century, communications systems coupled with economic and technological development had changed many of the cultural characteristics of these age-old societies (Morely and Robin, 1995). In terms of domestic building, It was apparent that concrete structures with their neatness and sharp edges represented modernity (Al-Naim, 1996). It also seems that whether or not better conditions were achieved, westernisation implied a higher societal status. Impressed by the Aramco model, in 1960, a circular from the Deputy Minister of Interior for Municipalities stated that all new houses require setbacks (Al-Said, 1992). These interpretations of modernity were all rather fragmented before the Government engaged Doxiadis Associates, Consultants on Development and Ekistics, Athens, to formulate a Master Plan and Programme to guide the development of Riyadh up to 2000. The final version of the Plan was approved by the Council of Ministers in 1973 (HCE, 1973). It confirmed and enhanced the trends of the 50s and 60s, and introduced a supergrid as the urban structure, within which secondary grids emphasised this form as the most desired pattern for the development of Riyadh. It proposed large plot sizes, confirmed the set-back requirements, and institutionalised the villa as the most desirable dwelling type. Doxiadis favoured a linear concept of city form based on his model of Dynapolis but the city developed beyond this concept and spread out in most directions from the traditional core (Bromley, 2002). Doxiadis did not believe in satellite developments, as he argued that a detached settlement form does not integrate into an expanding and dynamic settlement. The Government agreed and continued its policy of confining urban sprawl. Nevertheless, family houses were designated in areas of low density, implying suburban character (Al-Hathloul, 2017). The establishment of the Ministry of Municipal and Rural Affairs and the Real Estate Development Fund (REDF) in 1975, confirmed the villa as the only house type to be constructed in Riyadh. Whereas the courtyard enclosed by the traditional house afforded shelter, privacy and security; this contemporary building type surrounded by space set in the grid pattern, exposed residents to the climate and the gaze of passers-by (Al-Ibrahim, 1990) and the concept

of home was reduced from the traditional spiritual house to a westernised physical and spatial one.

4.0 Methodology

The research design employs mixed methods. The questionnaire survey is a quantitative technique aimed at collecting large data sets to establish patterns of responses. The semi-structured interview is a small scale method to establish reasons for the questionnaire results, as qualitative data, and to discover perceptions of place. There is also factual observation of the houses to provide visual data. The first aim of the data collection was to discover responses from residents as to how well both houses types satisfy the human needs established in the literature. This is achieved by the questionnaire survey of a sample of households. According to local statistics, in 2016, there were 155000 courtyard houses and 455000 villas in Central Riyadh. To achieve 95% confidence with 5% margin of error, sample sizes of 375 and 384 were required. It was therefore decided to randomly survey 400 households of each house type. 10 districts for each house type were selected by random numbers. A team of 10 researchers were engaged and briefed by one of the authors of this paper. Thus each researcher undertook 80 questionnaires in two districts, in person to generate the high response rate of 97%. The questions were based on human needs and ask about residents' satisfaction with internal and external comfort in different climatic conditions; safety, security, privacy – internally and externally, and the importance of status and external appearance. Following analysis of the results, the semi-structured interviews were carried out with a random sample of 10% of respondents, ie 40 families for each house type. The objective of these interviews was to discover the underlying reasons for the questionnaire responses and therefore the interviews were structured around the issues contained in the questionnaire survey. At the same time, a second set semi-structured interviews were undertaken to assess residents' perception of place. These focus on attachment, identity, sense of place, symbolism, and environment for both houses and neighbourhoods. Both questionnaires and interviews engaged with the head of household as representative of family members. The observation schedule of lived visual data (Emmison, Smith and Mayall, 2012) records appearance, spatial layout and alterations for both house types.

5.0 Results and Discussion

The purpose of the survey was to obtain insitu data as a means of testing the concepts discovered in the literature. In terms of questionnaire results from the courtyard houses, shelter in relation to the climate received a mixed response, with 51% of respondents opting for them being uncomfortable. Meteorological evidence shows that temperatures have become more extreme in recent years, and sandstorms have become more violent (see Figure 3). Thus, it is conceivable that the houses perform less well as climatic modifiers than in the past. Some residents have introduced air-conditioning and covered the courtyards to increase protection from the climate.

However, these changes affect the relationship between inside and outside. Safety and security are reasonably well-rated by respondents as both results are over 70%. Privacy has been the principal advantage of this house type, and it is still strongly supported by the residents for both indoor and outdoor spaces at 84% and 90% respectively. Status is not highly rated in the questionnaire results with only 16% support, and aesthetics received a neutral response as only 32% consider it to be important.

Figure 3: Sandstorm over Riyadh
reproduced by permission of The Associated Press

In the interviews, residents recognise that climatic conditions have worsened in recent years. They also point out that demand for car space has led to opening out the narrow alleys to produce wide asphalted roads. Their view is that in itself, this has contributed to raising the temperature in traditional neighbourhoods, and making it easier for sandstorms to blow through these spaces. After covering the courtyards, even partially, they feel that they have lost the notion of them being outdoor spaces (see Figure 4). They confirm that safety and security are generally good in the courtyard houses but there are comments about vulnerability of the roofs in terms of intruder access (see Figure 5). Privacy did not attract any further comment. Exclusive use of mud bricks precludes individual features, which adds to the plain or even austere facades. These residents are at the poorer end of society, as the vast majority of affluent citizens have moved out to the villas. The remaining residents are happy not to draw attention to themselves, but would prefer decoration to the outside of their homes.

Figure 4: Partially Covered Courtyard

Figure 5: Roof
reproduced by permission of the
Royal Commission for Riyadh City
(Arriyadh Development Authority)

For the villa houses, the questionnaires show narrow positive support for shelter in terms of comfort, and the house as climatic modifier; although there are some contradictory results. Residents reported 69% satisfaction with the indoor environment and 39% externally. A significant number of the residents have increased the capacity of their air-conditioning units. There is a strong positive response for safety at over 90% as residents have installed alarms and reinforced doors and windows against intruders. Security received less support at 45%. The response to inside privacy is strongly supported at 84%, but the results for outside privacy are less positive with 45% support as residents still feel susceptible to the gaze of others. Not surprisingly, status and external appearance are strongly supported, with both attracting over 90% positive results.

During the interviews, residents stated that initially, technological solutions to climatic modification appeared attractive. However, the need to continuously upgrade air conditioning units due to rising temperatures, and blocking-up openings (see Figure 6), are creating the feeling of an artificial environment that is causing psychological problems. The residents feel safe in their houses, but only as a result of the security provisions that they have installed. They acknowledge that the desire for a modern appearance with the use of large windows and balconies has had a negative impact by exposing the house to unwanted intrusion from onlookers, and leading to a lack of privacy of both indoor and outdoor spaces. As a result, households have found it necessary to block off balconies and windows on a regular basis. The residents also stated that they need the fences and barriers between houses that have become commonplace throughout contemporary neighbourhoods (see Figure 7). They are conscious that fences, blocking openings and security provisions are further isolating them from the neighbourhood. The interviews confirm that aesthetics and status were the most important factors in selecting villa houses. Some of the residents argue that this response to the needs of a 21st century lifestyle is not providing sufficient safety, security and privacy.
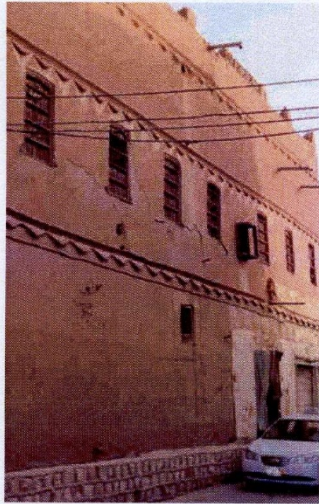
Figure 6: Blocked-up Windows

Figure 7: Fences and Barriers

The second set of interviews focused on place. The courtyard house type (see Figure 8) is joined to other houses and faces onto a relatively narrow street or alley, and the threshold marks the boundary between the public and private domain.   In these homes**,** residents responded as follows. Three spaces - flat roof, courtyard and living space, are key places that they would miss if they moved to another dwelling. These places bring the household together at different times of the day. There are no serious drawbacks with the courtyard house, except that it is not compatible with a modern lifestyle, eg. the sizes of rooms are too small to accommodate modern furniture, especially in the living space and bedrooms. Within the limitation of available spaces, family cohesion is generally maintained, and the courtyard remains the most commonly used space for household activities. Externally, the homes do not reflect residents' personalities due to the uniformity of building materials and elements. In addition, there is the difficulty of identifying the property boundaries of each house. Cultural values such as respect for the neighbours' privacy are expressed through the form and features of the house i.e. it is oriented towards the inside with limited openings towards the outside. The respondents do not worry about moving within the neighbourhood, because all locations within it have similar meanings that are linked to a particular family or tribe. Symbolism in the home is demonstrated by many familial changes. The perception is that the home is full of feelings and emotions, which change over time, according to the family occasion. The courtyard plays a central role as most family memories are forged within that space. Furthermore, the flat roof on the first floor is open to the sky and symbolises family and relatives. The females of the household tend to use the flat roof to enjoy their summer evenings with other female relatives, entertaining and sleeping. The roof and courtyard integrate the homes with the outside environment, connecting with the sky and enabling the residents to feel the weather throughout the different seasons of the year.

The respondents indicate that a neighbourhood of courtyard houses normally has a variety of spaces, which are essentially the domain of immediate neighbours. They confer a kind of group ownership on semi-public spaces that make them uncomfortable for anybody else to use, although other residents do cross them as part of a circulation route. There is also public space, where residents are able to meet and be involved in social activities. The external spaces – public and semi-public – constitute the most meaningful places which residents would miss if they moved to another neighbourhood. These places are always actively used by residents – children, women and men – with full consideration for safety and segregation between males and females. Taking a walk in the neighbourhood is a common phenomenon due to the alleys being narrow, shaded and prioritised for pedestrians. There is a strong feeling of belonging to the neighbourhood and the residents feel a metaphorical ownership of the spaces outside their homes. Their perception is that this feature typifies each traditional neighbourhood and supports their identity. There are positive feelings about their neighbourhood which would make it difficult to transfer to another neighbourhood. The spatial elements symbolise the major activities that take place in them e.g. the open space of the mosque symbolises the community annual festival that follows the month of fasting. The connection between home and neighbourhood is eased by groups of houses being formed around external spaces.

Street View

Outdoor living and sleeping

Male Guests

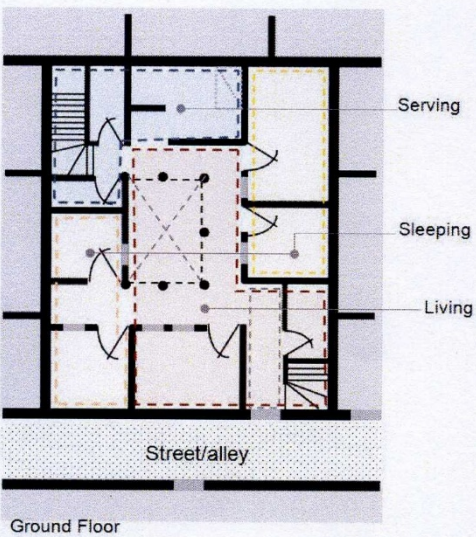First Floor

Serving

Sleeping
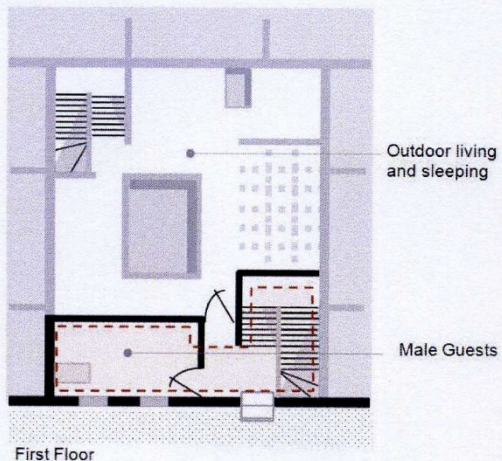
Living

Street/alley

Ground Floor

Figure 8: Courtyard House: Street View and Plans

The prevailing feeling amongst the respondents is that villa houses (see Figure 9) do not satisfy their spiritual needs, and that there are no particular places in their houses that they would miss if they moved. They tend to add elements in the yards, e.g. a Bedouin's black tent or a fire hearth, as reminders of a traditional way of living. The results indicate that the houses may not be capable of meeting their requirements for comfort as there is a perception that they lack safety, security and privacy. This in turn, creates a feeling of instability and the desire to make alterations to their houses or move to another place. A villa house may meet the needs for daily activities, except dining, as there is often no identified space. Hence, residents tend to convert the family living room into a temporary dining space for the time that they have a meal. The external appearance of their houses reflect the owners' personalities. They briefed the designers as to the kind of status they required, and the designers interpreted it so that the house style and materials express the owners' wishes. Nevertheless, the houses do not express cultural values. The number and size of outward-facing openings do not protect the privacy of the household. This, in turn, negatively affects relationships between neighbours. Symbolism is expressed as a place where children grow up and all the changes that come with it. The majority of memories is associated with the family living space where the household spends most of the day. There is a consistent notion that the houses are isolated from the external environment, and the house form, openings and building materials do not suit the climate.
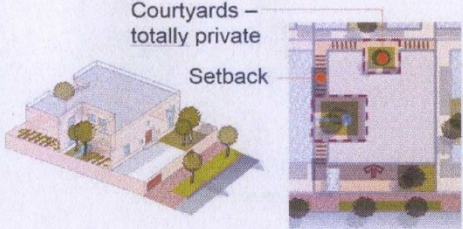
Street View
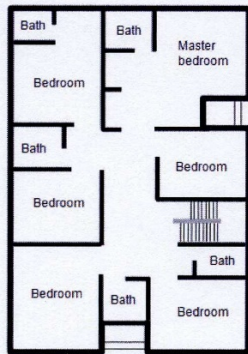
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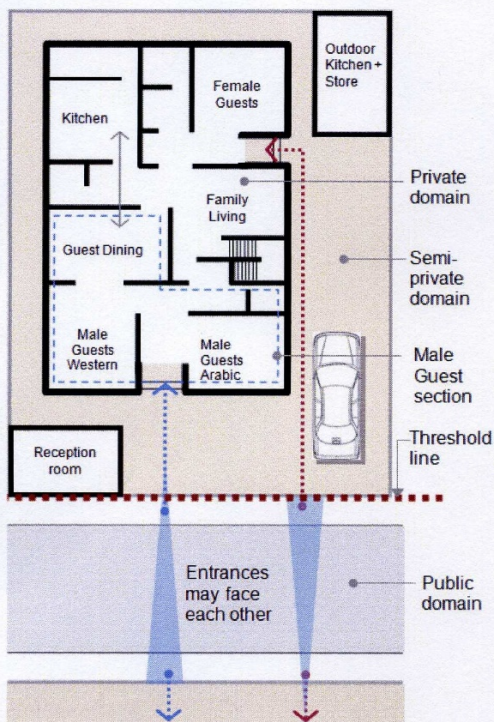
Ground Floor

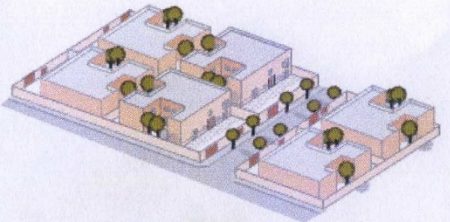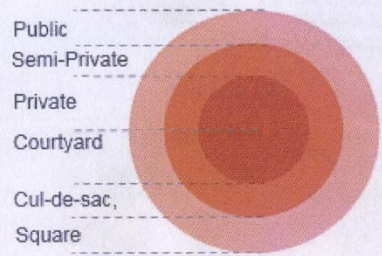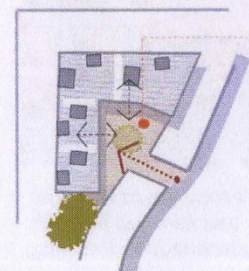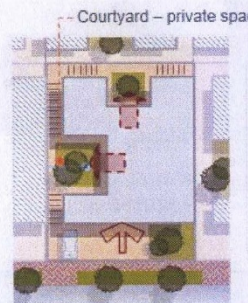Figure 9: Villa: Street View and Plans

The results demonstrate that a new type of house is necessary, set within a neighbourhood that exhibits more sophisticated urban design than merely grids of streets. The principles of these proposals are set out in Figure 10.

Home Principles		
Human Needs	Shelter	**Homes** • One setback is removed and no openings permitted on that side • Openings are orientated towards shaded areas in courtyards, which will help in reducing solar radiation, provide cooler air and mitigate load on air conditioning • Indoor and outdoor spaces are connected through transparent glass windows and doors that help to take advantage of view, natural light and ventilation while controlling ingress from sandstorms
	Safety	**Neighbourhoods** • Open spaces and a community centre should be emphasised as a focal point, which everyone can reach on foot. Different activities can be set up for adults as well as for children in order to enhance liveability and natural surveillance, which in turn inhibits access by intruders. • Pedestrian pathway network connects parts of the neighbourhood with each other as well as with the community centre, schools and stores at the edge of the neighbourhood • Narrowing street width will help to create safer streets thus encouraging residents to use them for different social activities **Homes** • Houses are detached on all four sides to prevent intruder access from adjacent roofs • Openings are minimised and those at the less private front of the are limited to the male guest area
	Security	• All provisions for Safety also relate to Security
	Privacy	**Homes** • Entrances do not face each other across the street, so it is not possible to look into properties • There are no party walls between houses as they adversely affect family privacy, especially at roof level • All family spaces open onto private courtyards • Courtyards help openings to be orientated towards private spaces that do not face neighbouring properties • Walls facing neighbouring properties do not contain openings • Indoor and outdoor spaces are protected from overlooking without screens
	Status	**Homes** • Contemporary design, modern building materials and construction techniques offer status without losing the benefits of traditional features such as courtyards • Expression of status can be at least partially achieved by decoration to the front facade of houses
	Aesthetics	**Homes** • Traditional local materials allow houses to be integrated into the environment • Recent developments in traditional mud construction demonstrate that it is possible to incorporate architectural features and decoration with this material • Courtyards minimise the size and number of openings in the exposed external walls

Courtyards – totally private

Setback

The courtyard concept has been adopted in a way that fits with the setbacks of the house.

200 m

No openings are allowed towards neighbours

Place	Attachment	**Neighbourhoods** • A spatial hierarchy that arranges clusters of houses around public squares and semi-public external spaces enhances the sense of attachment; and cul-de-sacs provide safe and identifiable external spaces for families to provide social activities • The neighbourhood has various opportunities for residents to engage with their environment; comprising public facilities, including a community centre, located around the neighbourhood squares • Pedestrian routes connect parts of the neighbourhood with others and provide safe paths, especially for women and children **Homes** • Courtyards allow family members to gather and share activities	
	Identity	**Neighbourhoods** • The neighbourhood has a hierarchal network of streets that allows graduated access to the houses – enhancing their identity • Organic urban structure, local architectural styles and building materials, suit environment and culture **Homes** • By integrating modern construction techniques and natural building materials, with traditional styles and forms, residents can create houses that that reflect 21st century lifestyles, including modern furniture, as well as respecting traditional identity	Public Semi-Private Private Courtyard Cul-de-sac, Square
	Sense of Place	**Neighbourhoods** • Particular urban design and features related to a particular neighbourhood help to make it a special place • Equality in the distribution of services, public utilities and facilities provides opportunities for all neighbourhoods. • Equality of provision enhances opportunities for shared meaning in all locations	Cul-de-sac
	Symbolism	**Neighbourhoods** • A hierarchy of meaningful external spaces - neighbourhood square, pedestrian routes, cul-de-sac, semi-public spaces enable social interaction between families and contribute to the symbolism of place **Homes** • Family spaces and courtyards enable interaction within the family over time, which assists symbolic development	Courtyard – private space
	Environment	**Neighbourhoods** • Patterns of neighbourhood design provide linkage with the external environment through the hierarchy of external spaces **Homes** • The adjacent relationship between family spaces and courtyards enables interaction between inside and outside within the house	

House	Types	**Homes** • Houses are detached • The omission of one of the setbacks and the addition of two courtyards enables more effective use of the plots • The rule that house footprints occupy 60% of plot areas is retained in accordance with current building regulations	
	Thresholds	**Homes** • Thresholds operate as transition points between the public domain and the front yard which constitutes as a semi-private domain, and the private domains of house and courtyards • Thresholds enable different groups to use different entrances ie families and female guests, and male guests	
	Internal Arrangement	**Homes** • The house is divided into three sections – male guests, family/female guests, and staff • Male guests still form a substantial part of household status, and are located in the front part of house, adjacent to front yard. • The family/female guest area also has priority as it is located at the focal point of the house, as a private domain adjacent to the courtyards • Staff are accommodated at first floor level, to optimise the ground floor for male guests, family and female guests.	
	Nature of Spaces	**Homes** • The design of spaces enables lifestyle and culture of the residents to develop without overemphasising status • The layout and construction enables the use of partitions that enable flexibility of changing internal spaces, in accordance with the future needs of the household • The location of spaces such as the dining room will enable them to serve male guests, female guests and the family at different times. This will reduce the amount of space that might otherwise be needed for separate spaces • Setbacks are integrated with courtyards to generate comfortable and usable external spaces • Family/female guests spaces are located around two courtyards. • The courtyards are exclusively private open spaces and places for family activities and celebrations	Private domain Male guests' section Semi-private domain Public domain
	Materials and Construction	**Homes** • Modern construction methods enable the size of rooms to meet 21st century lifestyles • Indigenous building materials such as mud and stone are relatively inexpensive and easy to construct. Modern building materials such as glass and aluminium can be readily incorporated to generate a contemporary aesthetic • The thermal properties of traditional mud bricks can be retained, while increasing their longevity and structural capabilities, by adding 5% cement to produce compressed earth blocks.	

Figure 10. Principles of the Proposals

6.0 Conclusions

The courtyard house has been the traditional solution for providing homes in the region and Riyadh in particular. It satisfied the self-effacing nature of the people through its anonymous external appearance. It met human needs and provided contact with the outside through the private courtyard, which also enabled the house to act as a climatic modifier. The buildings were connected, which produced a neighbourhood of intimate pedestrian spaces where the families could walk and meet others. The cul-de-sac form inhibited intruders. However, the mid-20th Century oil boom rapidly enhanced the wealth of residents, and changed the psyche of society. From a relatively equal society, status became increasingly important. The people could now afford the affluent western lifestyles that they saw on television and film. The Government encouraged a new kind of development by establishing an infrastructure of wide grid pattern streets. The affluence generated a car borne environment and walking became very uncomfortable. This structure encouraged individual villa houses to be developed. These houses satisfied the aspirational 21st Century lifestyles but presented a number of disadvantages. They internalised the family, and contact was lost with both the outside environment and local communities. Privacy is a particularly significant human need, which was undermined by the outward-facing windows. Residents built fences between themselves and their neighbours, and blocked-up windows to prevent passers-by seeing into their homes. They became almost totally dependent on air-conditioning and artificial light. All these factors have started to have negative psychological effects on the residents. The courtyard houses were viewed as too small, crude and representative of a poor past. Affluent residents did not wish to re-engage with this housetype. The context also changed to an environment of rising temperatures and increasing sandstorms. The courtyard house started to lose its traditional advantage as a climatic modifier, while air-conditioning in the villa houses was constantly upgraded, itself leading to rising outside temperatures. Clearly a solution is needed for this housing dilemma. A questionnaire survey was undertaken with 800 residents, and a sample of 80 residents were subsequently interviewed. A building analysis of each housetype was also recorded. The outcome was that a new schema is needed for house design and development, which incorporates a more sophisticated approach to urban design. An updated version of the courtyard house would re-establish connections between inside and outside, enable privacy and shading by locating doors and windows onto the courtyard. This will also reduce the load on the air-conditioning. Neighbourhood design should recognise the demands of vehicular transportation. Yet, while roads would enable direct communication, they could lead to smaller streets, eventually becoming cul de sacs in which groups of houses are located. These would protect outside space for families to congregate. The cul de sac form also allows a separate network of pedestrian spaces to permit safe and gracious movement, as well as opportunities to meet others. The dilemma of homes in Riyadh certainly requires a solution. This proposal is based on a sustainability theory that is aimed at retaining societal values, meeting the hierarchy of human needs, and establishing real places that respect 21st Century aspirations.

7.0 References

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