

The background of the cover is a detailed architectural plan of an Islamic city, likely a historical site like Medina. It features a complex network of streets, courtyards, and building footprints. A prominent feature is a large, rectangular area with a grid-like pattern of small squares, possibly representing a residential or institutional district. The plan is rendered in a light beige color against a darker olive green background.

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KABUL'S OLD CITY: IMPLICATIONS FOR ALTERNATIVES TO "WESTERN" HOUSING

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Introduction

Recent research on indigenous Afghan patterns of settlement shows evidence of a continuity of spatial pattern from the traditional family to the traditional city.

In contrast to the fragmented, hasty and uncertain experiments within the social and physical environments of many developing countries, the traditional Afghan pattern possesses a congruity of social, conceptual and physical spatial organization suggesting harmony between traditional Afghan built form and culture. Such a well defined pattern of settlement is symptomatic of firmly established cultural values which possess unwritten laws guiding the successful transformation of matter into meaningful built form. Of crucial importance is the question of the role this climate of traditional cultural values can play in designing for the long term success of desperately needed new housing development in the capital city, Kabul.

As with other major cities of the world's "developing" countries, Kabul is in the midst of an era of rapid urbanization with enormous demands being placed upon an already overburdened infrastructure. The immediacy and magnitude of the needed housing requires a fast and comprehensive planning strategy uncharacteristic of the incremental growth pattern of the traditional settlements. However, the importation of Western housing methods and styles, which seem to embody the needed characteristics mentioned above, entailing rapid construction and including strategies for the growth and development of the city's infrastructure, comprises and reveals latent Western values and apparent cultural conflict. Clearly, certain Western means can be used in non-Western ways if given the guidance of a different set of cultural values. This, however, necessarily entails making manifest the largely unwritten laws underlying the working rules of traditional building transmitted from generation to generation.

One promising source for discovery of modalities in traditional Afghan built form are the quarters of Kabul's old city. The old city is a visual complex record of the transition from spacious single extended family residences in the 19th century to a currently populous largely rental housing area. A comparison of the complex form of an old city housing cluster to numerous previously documented traditional Afghan settlements helps establish structure and sequence in historical layering and reveals consistencies and continuities in the following characteristics: spatial organization; spatial utilization; differentiations in the regulation of privacy; and orientations to the physical and spiritual worlds. Such consistencies, which are maintained throughout the socio-economic transformation of the quarter, illustrate the strength of traditional cultural values and the durability and adaptability of the traditional built form. These consistencies imply a continuity of cultural directives placed upon the evolving form of the quarter and could contribute to a better design for incorporating new technologies into the patterns of cultural continuities and change.

Description of Methodology

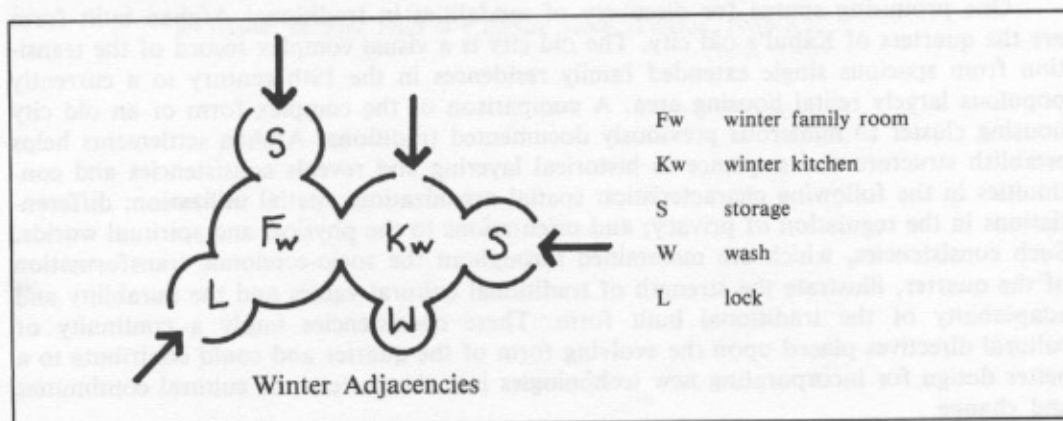
The basis for developing this study stems from the compilation of numerous studies of indigenous Afghan architecture undertaken by the Department of Architecture of Kabul University of which I was part from 1973 to 1975. Since that time numerous studies of indigenous Afghan housing have emerged in publications and now afford the first opportunity for a rigorous search for "unwritten laws" underlying traditional housing form. The principal methodology for the task was the building of a computer-based information system which identified patterns of relationships between such architectural attributes as circulation, massing, spatial position within the compound, climatic orientation, seasonal usage, shared facilities and natural light. This system is an "open system" and as such will accept additional data, and provide new interpretations with future additions to the data set. The current data consists of family rooms, storage rooms, wash areas, kitchens, and toilets for 23 nuclear families in assorted extended family relationships for traditional housing in the Kabul vicinity.¹ The reader is referred to the appendix for a detailed description of the methodology and the detailed analysis of individual functional characteristics.

Activity Space, Circulation and Location

The first step in understanding the overall organization of the dwellings involved the study of activity space, circulation and locational characteristics. The intention was to identify consistent patterns of relationships within these traditional dwellings and it was therefore significant when the analysis identified certain relationships which **always** occurred or which **never** occurred. The results indicate that although no formal "model" Afghan dwelling is being perpetuated, there is a presence of a small set of organizational principles which might be termed a loose structure.

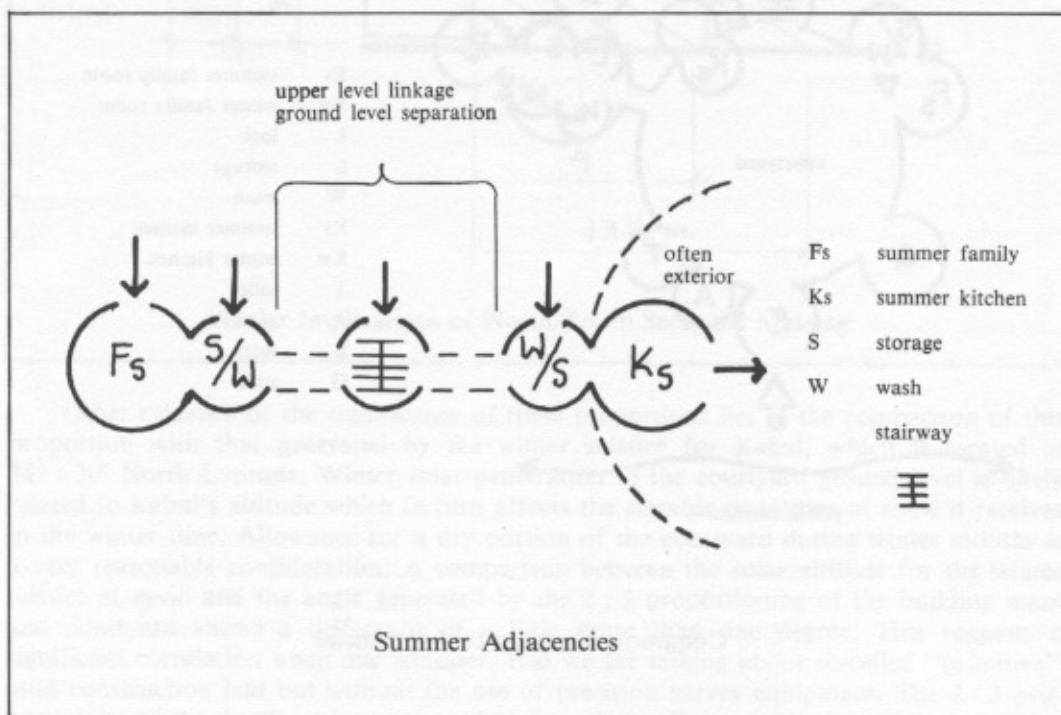
An overall activity-space relationship diagram which begins to explain this loose structure was developed through the study of winter and summer occupancy patterns. Virtually all research on traditional Kabul vicinity housing identifies shifting locations of household functions between summer and winter seasons.

The domestic activity spaces logically fall into the general categories of (1) private winter usage, (2) private summer usage and, (3) shared usage both seasonally and/or socially. For winter usage, the principal activity spaces appear to be a family room and winter kitchen which are almost invariably directly linked and which have "attendant functions" of storage spaces and wash space nearby. Rarely is the winter family room entered directly from the out of doors and the general pattern of spatial interrelationships can be characterized as thus:



All of the arrows of the diagram represent a common means of entering the winter quarters. The common use of a one room separation between the family room and the out of doors indicates a concern for infiltration of cold winter winds as well as overall heat loss. The family room is a multi-functional space which is focal to the nuclear family and accommodates eating, sleeping, relaxation and entertaining amongst other possible intermittent activities.

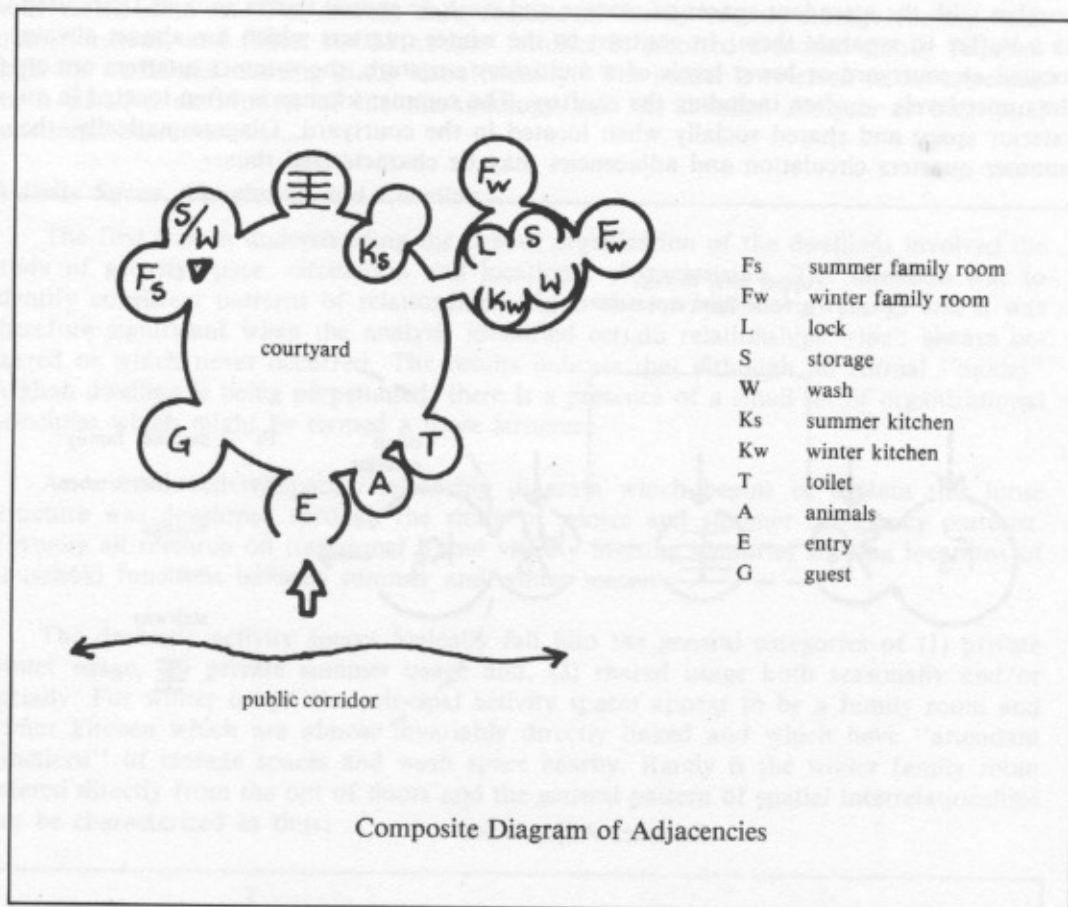
Whereas the winter quarters may be characterized as having "blankets" of attendant spaces enveloping the winter family room, the summer quarters are logically found to be quite the opposite. No longer does one find the apparent need for immediate adjacency of kitchen and family room. Indeed, they are often situated at some distance from one another with the attendant spaces of storage and wash or shared spaces such as stairs used as a buffer to separate them. In contrast to the winter quarters which are almost always located at courtyard or lower levels of a multistory structure, the summer quarters are on the upper levels — often including the rooftop. The summer kitchen is often located in an exterior space and shared socially when located in the courtyard. Diagrammatically, the summer quarters circulation and adjacencies may be characterized thus:



The summer quarters represent a second component of the Afghan house which is combined with the winter quarters and with a third group of activity spaces.

The third group of activity spaces which are shared seasonally and/or socially include entry (from public space), courtyard, stairways, toilets, guest rooms, and animal storage. A single entry through a strongly defined and constructed compound wall characterizes the traditional extended family dwelling and is accordingly shared by all for all purposes. Similarly, one courtyard is most frequently shared by the members of an extended family; however, multiple courtyards sometimes develop as a result of subdivision and internal growth of the dwelling. Subdivision of the courtyard is also a common result of the transition of an extended family dwelling into rental housing. Stairways are almost invariably activity spaces shared by

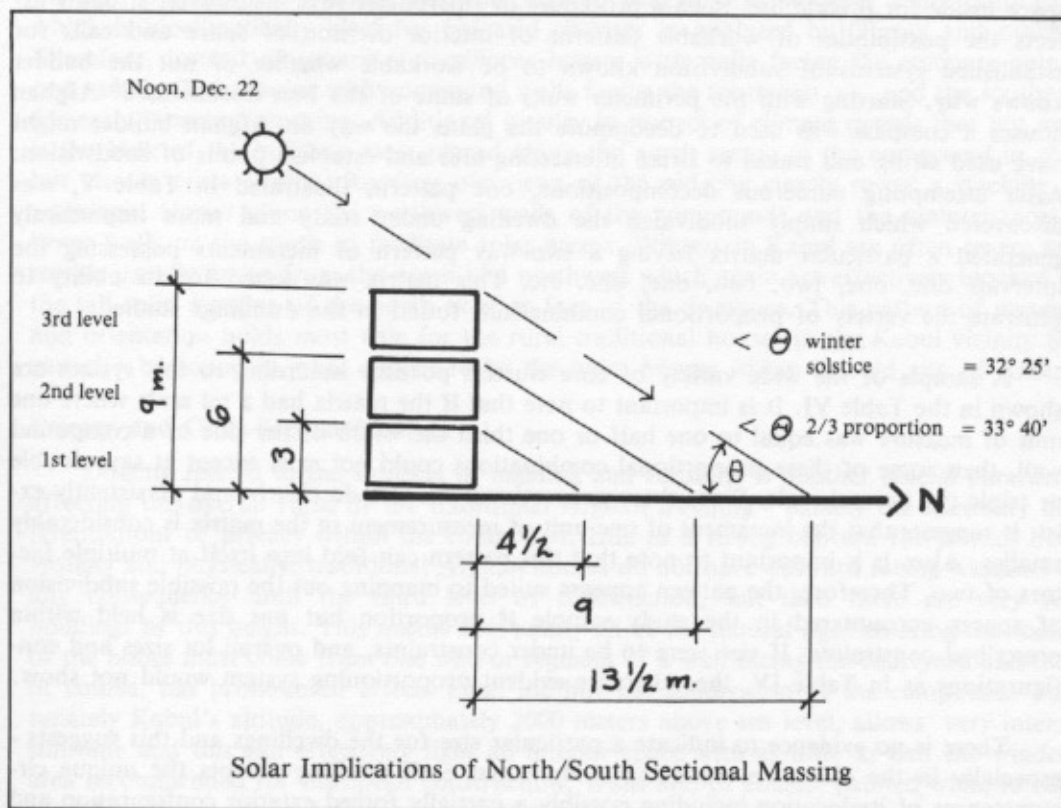
the extended family and their number appears related to the constraints against through-traffic and available building space. Toilets are often located in the courtyard against the public corridor wall although their location in multistory living arrangements sometimes forces traffic through other shared spaces. Guest rooms are treated with even more independence than family rooms and are usually separated from the circulation of the rest of the dwelling. A guest room is shared space in the sense that different guests use it at different times. Animal storage, mostly but not totally a rural phenomenon, is located very close to the entry to minimize penetration into the courtyard and to facilitate feeding and waste removal. General storage or sometimes garages appear to be the urban equivalent to animal storage. One possible composite diagram of activity space adjacencies and circulation flows appears thus:



Orientation and Proper Massing

The attributes of massing and orientation also play a major role in establishing the character of traditional Afghan architecture. A study of the plans and cross-sectional drawings of the previous research of Szabo, Kazimee, et. al., indicates a sense of proportion. A comparison of North-South courtyard dimensions indicates that the width varies only slightly from multiples of 4 1/2 meters. A survey of floor to floor dimensions showed only a slight variance from 3 meters throughout the rooms of documented traditional dwellings. A second review of the dwellings indicated that larger courtyards were associated not only with larger compounds in general but with the height of the massing of the south side of the dwelling in

particular. Indeed, one finds this proportion of south side height vs. courtyard north-south width to closely maintain a ratio of two to three. The proportioning system is as follows:



Other evidence of the significance of these proportions lies in the comparison of this proportion with that generated by the winter solstice for Kabul, which is located at 34° - 30' North Latitude. Winter solar penetration to the courtyard ground level is likely related to Kabul's altitude which in turn affects the sizeable quantities of snow it receives in the winter time. Allowance for a dry portion of the courtyard during winter months is a very reasonable consideration. A comparison between the solar altitude for the winter solstice at noon and the angle generated by the 2 : 3 proportioning of the building mass and courtyard shows a difference of a little more than one degree. This suggests a significant correlation when one considers that we are talking about so-called "primitive" mud construction laid out without the use of precision survey equipment. The 2 : 3 proportioning of the dwellings in cross section strongly implies another clear and direct relationship between man, nature and Afghan built form.

An examination of room sizes and proportions led to a comparison of all dwellings included in the computer information system, and in addition a cluster of old city houses in an aerial plan.² The number of rooms seemed to vary considerably in terms of size and function but the proportions of the rooms and of larger segments of the dwelling have remarkably remained within a very limited range of integer increment proportions. The most startling example of this proportional constancy came when the aerial enlargement of an old city cluster was decomposed into primary geometrical elements which almost invariably possessed the proportions of 1 : 1, 1 : 2, 2 : 3 and occasionally 3 : 4. This decomposition is illustrated in Table IV. The proportioning of the dwellings seem to be as simple and direct as one, two, three !

Traditional Afghan residences are characterized by massive perimeter or "compound" walls which are usually built first as a means of effectively claiming the space inside for private use. Such a procedure of "perimeter first", however, strongly affects the possibilities of workable patterns of interior division of space and calls for established systems of subdivision known to be workable **whether or not the builder knows why**. Starting with the perimeter walls of some of the best documented³ Afghan houses a compass was used to decompose the plans the way an Afghan builder might have used string and stakes to strike intersecting arcs and establish points of subdivision. After attempting numerous decompositions, one pattern, illustrated in Table V, was discovered which simply subdivided the dwelling under study and more importantly generated a particular matrix having a two-way pattern of increments possessing the intervals one, one, two, two, one, one, etc. This matrix was tested for its ability to generate the variety of proportional combinations found in the dwellings studied.

A sample of the wide variety of core clusters possible according to this system are shown in the Table VI. It is important to note that if the matrix had a set scale where one unit of measure was equal to one half or one third the width of the side of a compound wall, then some of these proportional combinations could not exist except at say, double or triple the normal scale. Since these proportional clusters do clearly and persistently exist, it suggests that the increment of one unit of measurement in the matrix is considerably smaller. Also, it is important to note that this pattern can fold into itself at multiple factors of two. Therefore, the pattern appears suited to mapping out the possible subdivision of spaces encountered in the study sample if proportion but **not** size is held within prescribed constraints. If size were to be under constraints, and overall lot sizes and configurations as in Table IV, the otherwise evident proportioning system would not show.

There is no evidence to indicate a particular size for the dwellings and this suggests - especially in the old town clustering study - that each dwelling accepts the unique circumstances of its location including possibly a partially forced exterior configuration and adjusts its size according to resource availability and family needs. Given these perimeter constraints as preconditions to construction, the evidence clearly shows that a proportioning system exists which is adaptive enough to manage some truly difficult situations. It is quite possible, although currently impossible to prove, that the **scale** used in laying out a dwelling is directly related to both the builder/occupant and the particular building site. This scale would then be applied to a prescribed pattern of decomposition which has elementary numerical relationships of 1, 2, 3, and possibly direct spiritual connotations.

As of now, one must simply say that regardless of the lack of understanding of all the possible connotations such a system might possess, it is already clear that it does possess capabilities for meaningful and efficient spatial utilization. It is clearly responsive to incremental growth and change and allows considerably more freedom of choice than western spatial patterns which have accompanied - unnecessarily - the importation of modern utilities and motor vehicles.

Although mention has already been made of the apparent response of traditional Afghan housing to the winter solstice, several other important attributes of orientation need explanation. A study of the city plan and history of the city of Kabul reveals the early settlement immediately to the north and east side of a mountain pass between Sher Darwāzā on the south and Koh-i-Asmai on the west. Through the pass runs the Kabul River and its alignment is very close to Makka orientation. The major street connecting both sides of modern-day Kabul still parallels the river but has received a major extension through the old city in the 1950's. The new roadway appears to have followed the grain of the existing houses and runs in an east-north-east direction. The housing, therefore, is

nearly perpendicular to this direction and has an orientation toward the south-south-east. Another meaningful congruence between spiritual, physical, and social necessities lies in the fact that the approximate perpendicular to Makka orientation is south-south-east, which is bioclimatically ideal for hot arid climates as analyzed by Olgyay and others.⁴ Therefore, instead of square or rectilinear houses with walls facing the compass points, one usually finds houses with compound walls facing the southwest, — and the southeast for early morning sunshine. Additional inquiry in respect of climate reveals that not only is the bulk of the building mass placed along the north sector of the compound in plan but also in cross section. Rooftop overviews of the old city clearly reveal a stacking of additional stories along the northwest walls of the compounds and the maintenance of lower walls on the south to facilitate solar access. Winters in Kabul are often severe and storms usually arrive from the north and northwest which again are effectively blocked by the tall solid massing of the north exterior face of the dwellings. This pattern of massing and orientation holds most true for the rural traditional houses in the Kabul vicinity but can also be found in what appear to be the older houses within the old city of Kabul.

Privacy and Cross-Sectional Design

Directly related to the subjects of massing and sunshine is another crucial parameter affecting the overall form of the traditional Afghan dwelling - namely the necessary differentiations of privacy within the compound. Due to a strong concern for privacy both visually and physically, traditional Afghan houses do not have outward facing windows of any consequence until the third level of construction, but then there are very few buildings of this height. This means that nearly all of the natural light entering the rooms of the house must come from one wall or segment of a wall facing the courtyard and this, of course, has pronounced effects upon the internal subdivision of the compound. Fortunately Kabul's altitude, approximately 2000 meters above sea level, allows very intense sunshine and this can effectively light an interior space with as little as half the window area recommended for European construction. Walls are, of course, painted white to help spread the light to the deeper recesses of interior space. Quite logically, one often finds that rooms assigned the corner locations, especially on ground level, are devoted to storage, animals and stairs which all require minimal light and are not spaces for human repose.

Conclusions

In characterizing the overall pattern of traditional Afghan housing one is immediately and unforgettably struck by the sense of mass and dominance in the rural fortresses: *kallas*. Of greater importance, however, is the strong evidence that clarity and strict definition characterize many scales of Afghan settlement, and this appears to be a pattern that is integral with traditional cultural values. Starting within the extended - family compound itself, one finds clear evidence of circulation routes within the compound designed to avoid non-nuclear - family traffic through private living quarters. These bundles of private space along with the attendant shared spaces are then encircled by the compound wall for defining the extended family/non-extended family relationship. In the rural *kallas* one finds a close-packed cluster of extended-family compounds with yet another encircling wall. This time the *kalla* wall is even more massive and possesses surveillance towers at its corners or flanking the entry! In the old city, one finds urban equivalents to the *kalla* where a cluster of houses have been built as a *sarāy* with a single communal courtyard, or have claimed a side street which they front as neighborhood territory and have installed gates to control the public access.⁵ Finally, we reach the overall pattern of settlement for an entire traditional Muslim city and find it to be a collection of different homogeneous quarters which is described as a cluster of villages.⁶ Therefore, one finds a hierarchical theme of spatial/social definition through the use of encirclement. Its

scales begin with the nuclear family and transcend through the extended family and urban neighborhoods or rural *kallas* to the final encirclement of the whole traditional city. This hierarchy of encirclement is diagrammatically represented in Table VII of the appendix.

To summarize the character of traditional Afghan housing one must see it as a product of the interaction of the Afghani and his soil which embodies within its form a harmonious synthesis of spiritual, physical, and social concerns. The strength of traditional form lies in its multiple meaning and clarity of purpose. Cross-sectional studies of form greatly aid in explaining how this comes about. First and foremost must be the courtyard which is not the building mass but rather the space which explains the mass. The courtyard is none other than a literal giver of life to the form. Physically the courtyard supplies the necessary sunshine for light, warmth, and purification. Also, it yields sounds and smells and a general awareness of the natural world outside the window. Socially the courtyard is the intersection of social domestic activities and hosts a wide variety of social tasks requiring a large open space. The courtyard gives physical, social and spiritual nourishment to the traditional Afghan house and promotes a close association with the rhythms of nature and with seasonal changes in domestic activity on the part of its occupants.

An additional congruity of physical and social necessity is the weak structural nature of the pisé or adobe construction necessitating wide massive walls at the base with a tapered or "battered" profile in cross section. Perceptually, the battered wall gives the appearance from the exterior of being even stronger and taller due to the foreshortening of the perspective view. This helps satisfy the need for a dominant, formidable exterior appearance which is especially important in rural locations. Additionally, the massive lower walls are ideal for thermal storage and winter comfort and provide complete separation from society. As one moves up the wall, structurally the placement of openings becomes less difficult and also more desirable as privacy is maintained through vertical separation and summer breezes through cross ventilation can be encouraged. Finally, one finds at the top portions of these massive walls very fragile rooftop parapets which function as screens between adjoining rooftops and are punctuated with small windows which serve as telephones amongst the women of the neighborhood. Much can indeed be learned by simply studying the transitions of purpose occurring through the ascent of an exterior Afghan wall!

The next logical question to ask is how well do these congruities within the single dwelling withstand the growth and change of a dense urban cluster? As was mentioned earlier, a residential cluster in the old city was studied for its proportional composition and revealed an order uncharacteristic of its overall appearance in plan. By using the previous proportion study combined with the knowledge of the limits of depth for a room effectively daylighted from one side, the segment of Kabul's old city quarter was decomposed into geometrical modules of space. The decomposition was done in harmony with the configuration of each dwelling and the result is illustrated in Table VIII. On occasion one found evidence of a full double layer of rooms between courtyards and exterior walls. This was found to occur with homes along the perimeter of the cluster where a portion of the rooms could receive light from two or more directions. However, one house, the largest of the cluster, is located near the center of the cluster yet exhibits this extra room width which suggests that it once was not surrounded and is an older dwelling of the cluster. Additional supporting evidence for this hypothesis includes its nearly rectangular form akin to its rural counterparts and, also, its rotation toward Makka and the south-south-east. The final evidence of its long term existence lies in its having one large courtyard space which has been subdivided into five small separate courtyards. Such evidence clearly suggests that this is an old single extended-family house of considerable stature

which has undergone a transition to rental quarters. The house and its surrounding cluster are depicted in four representative stages of growth and change in Table IX.

Besides the frequent example of growth and change through internal subdivisions of the single extended-family residence, evidence also exists of another growth pattern similar to a reptile crawling out of its skin. In this instance, repetitive segments of enclosure extend the depth of the original "U" shaped dwelling and effectively elongate one continuous open courtyard. In the study cluster shown, the courtyard has been segmented and reveals again the likely transition from large single extended family to rental quarters. Another clue to historical layering deals with the relationships of overall form of adjoining houses and their comparison to the normal simple rectangular form. In several instances the overall form of the residence has taken on a contorted form not characteristic of dwellings but rather of public corridors and courts and suggests how the network of public corridors has slowly been built over, constricted and occasionally completely plugged. This is the weakness of the old city and a primary reason why it is viewed poorly by today's Kabul residents. Although the virtues and capabilities of the traditional house appear to remain intact, a weakness which accompanies their strength lies in the total importance of the space within and the disregard for what occurs outside and beyond an owner's wall.

The challenge and the hypothesis of this research is that there is no reason why traditional Afghan built form must necessarily result in a chaotic urban infrastructure. The evidence of the old city cluster itself suggests that crowded conditions likely occurred only at the last stages of expansion when virtually every nook of public space without continual use was encroached upon. In contrast to this growth, it is important to note that the proportion of open to enclosed space **within** the compound wall has **not** changed significantly but apparently preserved the proportions reported by Kazimee⁷ of between 50% open/50% enclosed to 40% open/60% enclosed. Another cluster of old city housing was studied for evidence of excessive internal growth. It revealed the limitation of the dwellings to two stories. Many of these two-story houses have a building area covering one half or even two thirds of the lot, yet, through the use of their rooftops as additional open space, an overall balance of open to enclosed space is maintained. This apparent limit placed upon the expansion of enclosed space within a compound could be considered the "saturation point" and naturally varies according to lot size and configuration.

To help understand the capabilities of Afghan form related to incremental growth both outward and upward to saturation, a study was made of the variety of patterns found for combining ideally shaped units of space having a 50-50 open-to-enclosed distribution. These patterns may be found in Table X of the appendix. Of particular importance are those patterns which possess a spatial capability for incremental growth **and/or** change from single extended family to rental housing. Of even greater significance is that such patterns as these can not only allow for transitions such as those already experienced in the old city and consistent with current cultural values but they can also respond to such possible changing values as the eventual removal of courtyard subdivisions of renters and the recreation of the large open space — this time shared by unrelated families.

The horizontal incremental growth depicted in Table X is especially important in that it represents patterns which are mathematically possible yet remain uncharacteristic of traditional housing. The primary reason for this lies in the established method of land ownership through encirclement and occupation which means that most often the limits of the dwelling are established by the initial size of the compound wall. The wall is the property line and becomes so when it is built. This fact identifies a major weakness in at-

tempting to adopt Western housing schemes which rely upon local acceptance of the symbolic lines of maps and assume development efforts focused upon a master plan.

A more viable approach for meeting current housing needs is to recognize, accept, and utilize the strength of the cultural pattern of encirclement and to devise strategies for transferring the process of orderly subdivision and balance within the compound to the larger scales of new housing quarters and urban villages. Encirclement at these larger scales can take the form of major streets and modern utility services, with their layout keen to the patterns of spatial utilization in traditional housing. These urban-scale "walls" of streets and distribution systems could function in much the same manner as the compound wall in that they would provide a strategic framework for subdivision according to traditional means yet restrain overgrowth through the application of encirclement.

The urban scale capabilities of traditional built form largely remain an untapped resource which expanding cities such as Kabul sorely need and could most easily utilize given the building knowledge of the rural/urban migrants who are creating the housing needs in the first place !

APPENDIX

Methodology

A total of 143 separate activity spaces were analyzed according to 18 descriptors as follows:

Circulation

- D-1. Through traffic to another function.
- D-2. Direct doorway to outdoor courtyard.
- D-3. Direct connection to corridor and/or stair system, - which is directly connected to courtyard.
- D-4. Direct connection to 3 different functions by doorway.

Massing

- D-5. One story massing from courtyard level.
- D-6. North section of compound.
- D-7. South section of compound.
- D-8. Corner section of compound.

Location

- D-9. On courtyard level.
- D-10. Spaces tangent to compound wall but not to courtyard wall.
- D-11. Spaces tangent to courtyard wall but not to compound wall.
- D-12. One-to-one space/function stacking.
- D-13. Two-to-one space/function stacking.

Orientation

- D-14. Northeast.
- D-15. Northwest.
- D-16. Southeast.
- D-17. Southwest.