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D E C I S I O N S  A F F E C T I N G  P R O X I M A T E 
N E I G H B O R S  (1)

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INTRODUCTION

Dar Al-Islam, a non-profit corporation, intends to create a village for a community of Muslims on land which it has purchased near the village of Abiquiu, New Mexico, USA, approximately 60 miles northwest of the city of Santa Fe. The intention is to develop a self-sufficient Islamic community, created out of a careful allocation of its 1000 acre property for various uses such as agriculture, light manufacturing, handicraft industries, and educational facilities. A portion of the land, a plateau of approximately 77 acres, is allocated for the construction of the village for a projected community of 100 households. The village will include an educational complex, a community center, housing, and parking areas.

The Dar Al-Islam would like to plan and design the village according to principles and guidelines derived from the experience of traditional Islamic settlements, particularly in the formation of housing. Since that experience is especially valuable in terms of formulating guidelines for building decisions as it affects proximate neighbors, the Dar Al-Islam Corporation asked the author in the Fall of 1980 to develop appropriate guidelines for the village, which probably will be built in increments of 5 to 10 houses.

This article is comprised of a summary of historical context, a brief exposition of the components which constituted the traditional building process, and the proposed guidelines for the Dar Al-Islam housing, grouped in five categories derived from traditional considerations affecting design decisions among proximate neighbors. A primary assumption in developing these guidelines is the understanding that the Dar Al-Islam intends to develop cluster courtyard housing where two or three exterior walls of each unit are shared with other adjacent units.

HISTORICAL CONTEXT

Islam encourages settlement—as opposed to maintaining a nomadic way of life—and the nurturing of a cohesive community within a physical setting which will support the necessary functions for a "good" Islamic way of life. The primary requirements are the erection of the mosque, the necessary community facilities, and housing.

As Islam spread rapidly from Arabia in the seventh century, Muslims began the process of settling in conquered towns and with time adjusted their morphology to suit the requirements of the Islamic lifestyle. Numerous towns and villages were also created across the vast territory of the Muslim world.

The building of housing usually occurred in small segments and increments, across a long span of time. The nature of the process, coupled with the predominant use of a compact and clustered morphological system, meant that the relationships of adjoining neighbors in matters related to building design decisions generated certain problems and occasionally conflicts which had to be resolved. Early Muslim jurists recognized this problem and addressed it within the framework of the Fiqh (the science of Islamic jurisprudence). The Fiqh, is divided into two major branches: Ibadat which addresses matters related to religious observances, and Musallat which addresses matters of concern and conflicts arising from the interactions and relationships among people. Therefore, the issues of damages and/or equitability related to building activity—particularly in
housing—are included in the branch of Muamallat.

The body of knowledge and experience related to building activity and most other branches of the Fiqh was crystallized within the first three centuries of Islam. By the early years of the fourth Islamic century (about 900 AD) the foundations and the essential body of knowledge in jurisprudence was attained. A great deal of the precedents and principles are rooted in Medina, Arabia during the decade 1-10 AH (622-632 AD) when it was governed under the guidance and leadership of the Prophet Muhammad.

Of the four Sunni Schools of Law, the Maliki school, which is attributed to Imam Malik (born 93 AH/712 AD, died 179 AH/795 AD), is rooted most closely to the Sunna (Traditions) of the Prophet and to the experience and knowledge generated in Medina.

The Maghrib (or western) region of the Islamic World is the area within which the author undertook research for traditional building processes and guidelines. This area stretches from Libya in the east to Morocco in the west, and up to about 500 years ago it included most of Spain. The important point here is that Muslims in this region, since the arrival of Islam, were predominantly followers of the Maliki School of Law. There were attempts to introduce Shi’ism by the Fatimids during the early years of the third Islamic century, and more than six centuries later the Hanafi School was introduced by the Ottoman Turks. Despite these attempts, North Africa to this day follows the Maliki School of Law. People in other regions who are at present followers of this school are in Central Africa, Upper Egypt, the Sudan, and West Africa. Hence the examples and practices of building and urbanism in these regions have direct roots in Medina, where most of the principles were first founded (2).

COMPONENTS OF THE TRADITIONAL BUILDING PROCESS

It is important to acquire an appreciation of the way building design decisions were undertaken in the traditional setting and the methods/procedures which were utilized in the process. Essentially three components interacted simultaneously: norms and ethical principles, local design language, and building rituals and ceremonies.

1. **The norms and ethical principles** regulating societal conduct are rooted in the Quran (the Holy Book of Islam) and the Sunna (the sayings and traditions of the Prophet Muhammad). These principles are broad and their scope is general. Predominant examples are:

   a. **The avoidance of harming others**, whether the act of infringement creating harm is profitable or not (3).

   b. **The concept of interdependence among people and avoiding selfish behavior**, i.e. the respect of one’s rights and the rights of others equally, balancing out conflicting requirements equitably. This principle affects the use of common party walls and the disposition of rain water, for example (4).

   c. **Respect of privacy** (5).

   d. **The right of precedence or earlier usage**.

   e. **Respecting the rights of the neighbor**, especially exercising the option of pre-emption, such as the right of buying
an adjacent property offered for sale (6).

f The rights of the community in public rights-of-ways by insuring public safety and order in the streets (7).

g The encouragement of individuals to behave in a responsible manner, particularly in matters affecting the welfare of the community, i.e. nurturing the sense of responsibility to the community. Examples include maintaining the exterior walls in good structural condition and keeping the side of the street adjacent to exterior walls clean (8).

2 The use of a local design language or vocabulary is evident in the various regions and urban centers of the Islamic world. Each term of the vocabulary embodied the form and function of the physical component which is associated with it. This vocabulary acted as a communication medium for design decisions among people involved in building, particularly among the builder or mason, his client, and others involved in any specific project. The terms in the vocabulary related to all scales of the built environment, from the overall town scale to the ornamental and construction details of a single building type (9).

3 Rituals and ceremonies were associated with and accompanied certain events occurring during the process of construction. This aspect of the traditional experience should be understood and appreciated, as it helps to create a form of bondage between the builder(s) and their buildings, between the owner and his building, and between the builder(s) and owner. There is no doubt that this contributes to a quality product. The owner's affection for and bondage to the project, particularly if it is his house, will increase, and the bondage and goodwill generated between owner and the builder(s) working for him contributes to the bondage among the people of the community.

A well known example of such a ritual ceremony is the sacrifice of a sheep and the recitation of the Fatha (the opening chapter of the Quran) on the site before construction begins. This ceremony is usually attended by the Imam (acknowledged religious leader) of the community, the owner, and his family and relatives. It is repeated at the completion of the project and just before the owner moves in his furniture and occupies the building (10). It is believed that this practice has its roots in the traditional story of the Prophet Ibrahim (Abraham) and his son Ismail in Makkah; the sacrifice is inspired by the event of Ibrahim about to sacrifice his son Ismail, when God delivered to him a ram to sacrifice in lieu of his son. According to tradition this event happened some time before Ibrahim asked Ismail to help him build God's House, the origin of the Ka'bah in Makkah.

The act of building those first walls of the Ka'bah has symbolically influenced the first act of building any Islamic settlement or house. Therefore one of the first items to be built in a town, in conjunction with the mosque, is the perimeter wall. Symbolically, the act of establishing first the boundary of a house is also reminiscent of this tradition.

The importance of the interaction of the above three components in a truly Islamic way of pursuing the on-going process of building must be stressed. Although the
guidelines proposed will satisfy one important component, it is up to the Dar Al-Islam community to develop aspects of the other two. At first, implementation would require the conscious effort of all involved in the building process to bring to bear the workings of this mechanism. With time it will become part of the unconscious behaviour of the community, and only then will the built environment created be truly an expression of an Islamic community. It is therefore hoped that the Dar Al-Islam community will recycle an ancient tradition with proper understanding and knowledge, and not superficially copy traditional designs and physical elements.

THE PROPOSED GUIDELINES

Given the above historical sketch and outline of the major components comprising the traditional building mechanism, a set of guidelines has been proposed for design decisions affecting proximate neighbors. The guidelines are grouped under five categories which cover most considerations affecting such decisions (12). They are concerned with: Streets, Micro Zoning, Privacy, Walls Between Neighbors, and the Discharge of Rain and Waste Water.

1 STREETS

It is more than likely that there will be two types of streets in the Dar Al-Islam (DI) village: vehicular streets and pedestrian streets, most of which would be accessible by a vehicle in emergencies or for other special reasons. It is also assumed that pedestrian streets will be hierarchical--primary and secondary. Most housing will abut pedestrian streets.

The following principles--applicable primarily to pedestrian streets--must be observed:

1.1 A minimum right-of-way must be maintained. The widths of all streets will be determined when a plan for the village is developed. Those widths should be considered the minimum, and no infringement should be allowed within those dimensions.

1.2 The general alignment of streets has to be maintained; however, it is not necessary to observe precisely straight alignments in their ultimate formation. Irregular alignment can occur when:

1.2.1 The location of exterior walls of houses are allowed to partially deviate in response to individual house design requirements and micro topographic conditions, and

1.2.2 The concept of the exterior Fin is
Air Photo of the Village of Sidi Bou Sa'id, Tunisia
utilized imaginatively (explained below).

1.3 The traditional concept of the exterior Fina must be applied on the ground and in the air. The traditional parameters of this concept are:

1.3.1 A certain width alongside the exterior walls of a house—on the street side—belongs to the owner for his benefit and use, provided such use will not create harm to the public and its right-of-way. In the absence of a public authority which maintains streets, it will be the owner of the Fina—as defined above—who will be responsible for maintaining and keeping it clean. Suggested uses outside of the minimum width for the public right-of-way are:

a Space for grocery carts and garbage bins if they are not incorporated within the exterior wall in a suitable recess.

b Space for exterior planting of flowers and trees. This space could be an extension of the interior garden or courtyard.

It is envisaged that Dar Al-Islam will utilize a similar pattern for housing (11)
c Space/location of a *Sabil* (privately donated and maintained drinking fountain for public use) if it is well located within the overall requirements of the village layout.

It should be noted that the Fina on the ground is created at the expense of losing ground area from the plot allocated to an individual. This can be compensated by building higher or using the concept of the Fina in the air, or *Sabat*.

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1.3.2 The Sabat is a structure, usually a room spanning the street, commonly referred to in current building terminology as an air-right structure. Its purpose is to create more space for a house on one side of a street and/or link two houses on opposite sides of the street—or provide the potential to do so.

a The Sabat is usually supported on the walls of the house(s) or on columns. The method of support depends on the circumstances and intentions of the owner(s). Traditionally the Sabat is supported on the walls of the house, on the side of its owner, and on columns on the other side. This was due to legal constraints and the disadvantages of using the opposite wall, or alternatively the sequence of events precluded the use of an opposite wall. When a person decides to build a Sabat at a later date, it might be easier structurally to support it with columns on both sides.

b Following principle 1.1 above, the columns supporting a Sabat must not fall within the minimum width right-of-way of a street.

c The clearance height of a Sabat depends on the street on which it is constructed. The minimum clearance should be 2.16 meters (7 feet), which is adequate for small private cars. In addition to the seven-foot stipulation, a typical average clearance should respect the height of exterior doors and other design features, and could well be more than seven feet. Where streets are designed for
emergency vehicle access, such as a fire truck, the minimum clearance should be 4.10 meters (13'6")..

1.4 The treatment of downspouts and gargoyles on streets must observe the following principles:

1.4.1 Downspouts are preferred to gargoyles, because they do not cause splashing.

1.4.2 When gargoyles are used they should project from a one-story structure and pour within the width of the Fina of the building from which it originates.

1.4.3 Gargoyles should not be allowed from structures of more than one story.

1.5 Street maintenance is achieved according to the following principles:

1.5.1 Traditionally street ownership affected the responsibilities and methods of maintenance. Cul-de-sacs were legally regarded to be communally owned by the people using them, and their maintenance was their responsibility. This included cleaning and repairing the surface and the waste channel(s) which might be located under the surface. Elaborate maintenance procedures were followed based on Islamic principles of interdependence, respect, and equity.

1.5.2 It is suggested that procedures for maintenance of streets be developed after the type and characteristics of streets are known, and whether DI wants to establish a "public" organization whose function will be similar to a contemporary municipal authority which will carry out maintenance, or whose responsibility will be similar to the traditional institution of the Muhtasib (14) which was more supervisory and less involved in carrying out actual tasks. Therefore the involvement and responsibilities of individuals will depend on the policies and approach(es) to be followed by the DI community.

2 MICRO ZONING: RESTRICTIONS ON USES CAUSING HARM

Three sources which can create harm were recognized traditionally in the Islamic city, and they are still valid for the DI village. They are smoke, odor, and noise.

2.1 Principles regarding the control of uses which generate smoke:

2.1.1 Sources of smoke should be differentiated into two categories:

a Smoke from essential activities of a household, such as a home bakery, or heating system, such as a fireplace or furnace. These are allowed and their discharge of smoke should be according to accepted practice.

b Smoke from activities outside those of a normal household, such as building a large bakery in a house to be used for commercial purposes, or converting a house into a public facility, or burning garbage without careful discharge of the smoke. Such activities should not be tolerated unless there is a compelling reason for allowing them. If they are allowed
then the discharge of the smoke should be carefully considered to cause minimum nuisance to adjacent neighbors.

2.2 Principles regarding the control of uses which generate odor:

2.2.1 Any source of offensive odor should be carefully handled and controlled.

2.2.2 Garbage disposal should be in covered bins located near or outside main doorways in appropriately covered recesses so as to protect the seepage of odor and visually conceal the garbage.

2.2.3 The location of toilets or latrines adjacent or within outside gardens/courtyards should be carefully designed and handled to avoid the generation of any odor for the inhabitants and their neighbors.

2.2.4 Activities which generate odor should be disallowed, such as the drying of cow-dung on the roofs for use as fuel, and workshops which generate odor such as a tannery.

2.3 Principles regarding the control of uses which generate noise:

Traditionally offensive noise was usually generated by animals—from their quarters, such as a stable—or from activities such as garment beating and wheat grinders, operated by hand or by an animal.

2.3.1 DI should establish a clear policy regarding the introduction of animals for economic purposes into the houses. If this is allowed, clear guidelines must be established for their upkeep.

2.3.2 Certain activities in home workshops generate noise either directly due to hearing the noise source, or indirectly due to feeling the vibrations which the activity might generate. Examples are the consistent use of power saws and the hammering of a blacksmith. DI should identify such potential activities and must draw clear policies as to which will be tolerated within houses and others which would require allocating them outside of or adjacent to the housing areas, where the noise would not disturb others.

3 PRIVACY FROM VISUAL INFRINGEMENT

3.1 As a general rule windows and doors were viewed traditionally as "old" and "new" (or "recent") as a result of the sequence of building events. On the whole older windows and doors have a priority over newer or more recent ones in terms of their right for continued existence. The consequences of this general principle are as follows:

3.1.1 When a person builds his house before his adjacent neighbors, he would have more freedom and choices regarding the location of his windows and exterior door(s). However he should bear in mind the consequences of his decisions on future adjacent neighbors.

3.1.2 A person who is building adjacent to existing structures must adjust his decisions according to built facts surrounding his site. Only in very special circumstances which create hardship, can a person ask that a window in an adjacent structure be
permanently shut due to the harm its continued existence will create.

3.2 Principles regarding the location of windows on streets and other public areas:

3.2.1 The height of a window sill on the ground level, facing a street or a public area, is determined from the exterior. It should be approximately 1.75 m (5' 9''), which is above eye level of an average man. This dimension can be less if the sight-line from the window into the interior would pass above head level of a standing person(s) inside. This would occur when the interior floor level is appreciably lower than the outside street level. Therefore, and as a general rule, ground-level windows on the exterior walls facing streets should be designed for the purposes of ventilation and light. Measures for security should also be kept in mind in detailing such windows.

3.2.2 Windows on upper levels (second and third stories) facing streets and other public areas have no restriction on their size and sill height. However, their location should be influenced by existing windows on the other side of the street. The proper thing to do is to set them aside, but this is not as critical as the case with doors (discussed below), since exterior windows were traditionally covered by a wooden lattice to prevent visual penetration (15).

3.3 Principles regarding the location of windows facing the interior courtyard or garden.

3.3.1 There are no restrictions on the location and size of ground-level windows facing the courtyard or garden. Any constraints will be due to other design requirements.

3.3.2 Upper-level windows, whether or not they are facing the interior courtyard or garden, must not be located in such a way that they would provide direct visual penetration of adjacent neighbor's courtyards or gardens.

3.4 Principles regarding the location of doors:

The primary consideration here is the location of main and secondary doors on the exterior walls of a house. The general principle outlined at the beginning of this section (3.1) regarding the status of a door being old or new must be observed.

3.4.1 Principles regarding the location of doors on streets narrower than 7 cubits, approximately 11' 6'' (The distinction created by this dimension between "narrow" and "wide" streets is influenced by traditional practice, which also combines the width and the activity on the streets as visual distractions/barriers): For the DI village, and depending on the plan to be adopted, it is suggested that the following principles apply to streets 11'6'' feet or narrower. It is also recommended that they be followed in any other situation when direct visual corridors from opposite sides of the street are conspicuous.

3.4.2 A door must not be located exactly opposite another door. It should be set back from it adequately to discourage looking into the entry hall of the opposite house.
3.4.3 A door must not be located opposite a shop, or vice versa. They should be set back from each other so that direct overlooking will not be possible from the shop into the entry hall of the opposite house.

3.4.4 On the same side of a street, a door must not be located adjacent to an existing neighbor's door without his consent. This is to avoid disrupting the Fina space on both sides of an existing door, in the event that such a Fina space was convenient and used by the neighbor. Examples of such uses include space for flower pots, loading/unloading groceries, and temporary or emergency parking.

3.5 Building height and rights of vertical airspace:

The Maliki School tradition attaches great importance to the rights of the owner within his vertical airspace. Maliki scholars sometimes suggested that even if the additional height of a structure might cause harm to an adjacent neighbor by the obstruction of sun and/or air movement, the height should be allowed. However due to the overriding concern attached to the prevention of visual penetration, and the consistency of traditional technologies, we find that in most Islamic towns the height of residential structures is relatively uniform.

3.5.1 For DI village the principle of "sun-right" or "solar Access" should be adopted and upheld by all. Any obstruction of the sun on critical areas of an adjacent property during certain hours of the day should be considered a harmful act and must be prevented.

3.5.2 The other potential problem which must be addressed by the DI community is the question of distant views from upper levels and, when applicable, from roofs of the houses. If consensus is reached about this, then it is suggested that retention of southeast and southwest views would be compatible with the slope and requirements of the sun.

3.6 Principles for the prevention of visual infringements from roofs:

Traditionally in towns which are located in hot dry regions of the Islamic world, people built flat roofs for sleeping on during the summer season. Overlooking from roofs and prevention from being overlooked became an important consideration. Since the climate of the Abiquiu area in northern New Mexico would not necessitate sleeping on the roof, it would be possible to use various roof configurations.

3.6.1 When a flat roof is built and it is anticipated that it will be used by the occupants for clothes drying or for some other reason, then the following measures must be taken to prevent overlooking into the neighbor's private realms:

a A parapet high enough (usually about 5'-9") to surround those areas of the roof which afford direct views of neighbor(s) private zones, such as courtyards and/or gardens.

b Exit doors to the roofs which would afford views of neighbors' interior courts/gardens must also be blocked by a parapet or located
away from the side affording such views.

c Windows in stair towers must be located high enough to prevent them from being used for overlooking.

3.7 Location of shops among houses:

As mentioned above in principle (3.4.3), the location of shops—or workshops open to the public—among houses should be carefully considered and the following principles observed:

3.7.1 A shop must not face door(s) of opposite houses, particularly in streets 11'6" wide or narrower.

3.7.2 The location of shop(s) should not generate excessive traffic in an otherwise quiet area or street. Too much activity and noise is considered harmful to adjacent houses.

4 WALLS BETWEEN ADJACENT NEIGHBORS

In clustered and compact housing—such as the type used in traditional Islamic towns, and as suggested by the author for the DI village—the role, treatment, and use of the walls between adjacent neighbors is important. In traditional situations—due to the longevity of houses on the same site, rebuilt many times over the centuries—we find that major problems which created conflict between neighbors were related to the ownership verification of party walls, and, when ownership is known, the rights and responsibilities of the neighbor(s) when the wall is owned by one, or when it is jointly owned by both. In the DI village, it is suggested that careful thought be given to this problem to avoid conflicts in the future.

A simple approach should be developed, using the following principles derived from considerations of one of three possibilities related to the sequence of building events:

a Wall(s) of a house are built by one owner when adjacent properties are still vacant.

b Response to existing wall(s) by a neighbor who builds next to a house at a later date.

c Wall(s) are built in joint cooperation between adjacent neighbors at the same time.

4.1 Principles related to wall(s) of a house built before adjacent houses:

This situation involves the most care and is usually more costly to the single owner than in the other two possibilities. From an Islamic ethics point of view it would be wrong to consider design decisions which are of consequence only to the house under construction. Consideration should be given to future adjacent houses, according to the following principles:

4.1.1 Wall thickness should be approximately 1'6" minimum to 2 feet optimum, built of adobe or solid masonry. This would provide the necessary sound insulation as well as adequate support for ceilings and roofs.

4.1.2 Foundation widths and depths should be, as much as possible, responsive to potential requirements of future adjacent building decisions.

4.1.3 Damp-proof coursing should be protective of the building regardless of unexpected adjacent building
decisions. Both principles (4.1.2) and (4.1.3) should be responsive to the topographic conditions of the site.

4.1.4 No windows or similar openings are allowed for the ground and second level of the wall. It might be possible to have a window or small light/ventilation opening on a third level, provided that it is understood that a future neighbor might ask that it be shut.

4.1.5 It is possible to narrow the thickness of the wall, for the second and/or third levels. If this is done, the narrowing should occur on the outside face of the walls (i.e. towards the future neighbor). In this way the characteristics of the wall will be evident to the future neighbor and will be easier to respond to by adjacent construction activities.

4.2 Principles related to the response to existing wall(s)—such as those built according to principles 4.1.1 to 4.1.5—by a future adjacent neighbor.

Just as an earlier neighbor must design his exterior walls with considerations and possible benefits to a future neighbor, the later also has certain responsibilities and obligations regarding the use of adjacent existing walls.

In all circumstances the new neighbor must do his utmost to respect and work with the peculiarities of the existing walls. If necessary, he should undertake adequate consultation with the neighbor who owns the wall(s) to ensure that his design decisions will create no future harm to the integrity and stability of the wall(s). The following approaches and guidelines should be helpful:

4.2.1 Total dependence and utilization of an existing wall: in this approach careful study and analysis of the existing wall should be first undertaken. The following point out what can and cannot be done:

a Ceiling and roof support beams can be inserted in the wall. They should be higher than the level of existing beams of ceiling(s) or the roof of the adjacent house. This measure is to reduce any potential damage to existing beams during construction. The extent of using the wall for this purpose should be worked out with its owner and stipulated in the form of an agreement for such use.

b No wall recesses (for built-in shelves or similar purposes) are allowed to be made by cutting into the existing wall.

c Partial pointing or plastering followed by painting should be allowed.

d The title and ownership of the wall will, in usual circumstances, remain with the original owner. However it might be possible to work out a partial or joint ownership agreement in return for monetary or some other kind of compensation, worked out between the parties and sanctioned by the village Kadi (judge) and accordingly documented/certified.
4.2.2 Partial dependence on existing wall as a barrier, supplemented with a new system for structural support. In this approach the following is what can and cannot be done:

a A column and beam system can be built adjacent to the existing wall to carry ceiling and roof beams or other type of structure to be used, such as vaults or domes. Careful attention to the foundations should be given so that they will not inflict any damage to the foundations of the existing wall(s). In this treatment the wall surface can be improved to serve as a finish by pointing, plastering, and/or painting. Except for normal occasional nails for hanging pictures and other such items, no other constructional or structural use should be made of the wall.

b When locating the ground-floor level of a new house, careful attention should be given to the level of the existing damp-proof course so that (i) it is appropriately utilized for the benefit of the new house, and (ii) damage to the existing house due, for instance, to the raising of the ground level above the existing damp-proof course, is avoided. Similar considerations must be given to the roof and its junctions.

4.2.3 Independence from existing wall by building another adjacent wall. Two approaches are possible:

a Building a new wall separated from the existing wall by an adequate cavity (which could be as much as 12 to 18 inches wide) so that it will act as an independent structural entity. The cavity can be filled with earth or sand as the wall is being erected. In this approach careful attention is necessary at the foundation level (i.e. of the existing and new wall).

b Build a new thin wall (about 9" thick) adjacent to the existing wall, supported by a cantilevered type of foundation footing. The benefit of this approach is that the new thin wall will be partially supported by the existing thick wall, thus enabling it to take structural thrusts from the ceiling and roof--more than it will normally be able to do without the support of the existing wall--because structural distribution of forces will be shared by both walls. In this approach two important aspects should be carefully dealt with: (i) the treatment of the foundations, and (ii) the ground floor level and its relation to the damp-proof course in new and existing walls.

In this approach maximum freedom is achieved due to possible choices in: (i) location of ceiling and roof levels, (ii) creation of recesses in wall for built-in bookshelves and storage, and (iii) choices in wall treatment and finish.

4.3 Principles related to wall(s) which are built in joint cooperation between adjacent neighbors at the same time.

This situation assumes that two or more
adjacent neighbors decide to build their houses at the same time. It is highly recommended that cooperation between such neighbors be encouraged so that they can work out the design and potential of using the common walls jointly. This also means that the cost of these common walls be equitably divided. The following design decisions could be arrived at to the mutual benefit of all parties:

a Location of ground level(s)

b Location of ceiling and roof level(s)

c Location of recesses for built-in shelves, storage, etc. on both sides of a wall.

d Savings in foundation costs, due to their pre-design to accommodate joint requirements.

e Clarity in ownership of walls, and maintenance responsibilities.

5 DISCHARGE OF RAIN AND WASTE WATER

To begin this section it is important to clarify the distinction between rain and waste water within an Islamic framework of values and ethics. Rain water is viewed as a gift from God to be utilized and shared, whereas waste water is considered a harmful substance to be discharged appropriately.

5.1 Principles of rain water drainage:

Traditionally in Islamic towns, particularly those located in arid and semi-arid regions, rain water was collected in cisterns and used for household washing requirements. Such practice had important implications on the drainage pattern of rain from roofs of houses and the impact on the responsibilities of adjacent neighbors. It is important for the DI village to decide whether or not to encourage a similar practice. This would depend on the availability of water for household use and studying the pros and cons of adopting such a practice. In writing the principles for this section it is assumed that this practice will not be followed.

5.1.1 Rain water discharge from roofs:

a Each house should attempt to evacuate the rain water from its roofs within its boundary.

b If a portion of the rain water is initially designed to drain into an adjacent property, and if that situation was not challenged and then continued operational for a long period of time, it should be understood by the owner of the house from which the rain water originates that he might not be able to redirect that water to within his property in the future. This would be particularly so if the neighbor or adjacent property is benefitting from it. The roots of this principle originate in one of the Prophet's sayings which stipulates that water, pasture and fire should be shared by Muslims (16).

c As a general principle, rain water from each house should be designed to flow towards either one of the following destinations or to both: (i) the interior courtyard or garden, or (ii) the adjacent street.
5.1.2 Rain water discharge onto street(s):

a Due to the gift from God association of rain water, its discharge should, as much as possible, be designed to be utilized for a worthwhile purpose, instead of being totally wasted.

b Given the principle in (a) above, it is recommended that rain water is discharged in such a way that it can irrigate semi-private green strips/areas within the Fina of each house, and public green areas/trees outside of Fina areas.

c At a large scale, it is possible to accumulate rain water and direct its flow into one or more community receptacles, which can then be used for a useful purpose.

d The method and means of discharging rain water from each house towards the street(s) must be carefully assessed so that no harm or nuisance occurs onto passersby or neighbors. Gargoyles should be avoided whenever possible, as they generate splashing. Downpipes are recommended, their outlets about $10^\text{th}$ above ground. Alternatively, if rain water is collected inside the house, it can be taken out to the street by a horizontal discharge pipe.

5.2 Principles of waste water discharge:

Traditionally each house or building discharges its human waste into cesspools. Waste water from washing was collected from each building by a system of channels which usually run under the surface of streets. Depending on the town and its topography and surrounding natural features, the waste water thus collected will be disposed of outside the walls of the town.

In the DI village it is anticipated that human waste and waste water will be collected by a system of secondary and primary pipes which will pass through a community septic tank and then be filtered out below the plateau area. Lessons from the traditional experience cannot be used for the operation of such a contemporary system.

There are, however, lessons in the approach for cost-sharing the system and the procedures for its maintenance. Specific traditional examples exist which were developed by the *Fuqaha* (plural of *Faqih*, a religious scholar specializing in the Figh—the science of Islamic jurisprudence) following Islamic principles of interdependence, respect for the neighbor, and the sharing of burdens morally and materially.

When it is clear, in the near future, what the responsibilities and relationships will be between the individual family and the DI community (and how that framework could potentially affect cost sharing in the economy of the village and such matters as responsibilities of maintenance) then it is possible to develop intelligent guidelines and principles, according to Islamic values and ethics, to deal with waste water discharge and other similar problems, which no doubt will confront the DI community in its growth, development and maturity.

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REFERENCES

(1) A shorter version of this article entitled "Recycling a Traditional House Process: A Case in Abiquiu, New Mexico" was first published in the Proceedings of the 74th Annual Meeting of the Association of Collegiate Schools of Architecture held in New Orleans, Louisiana, 22-25 March 1986.

(2) According to Dr. Husain Ali Mahfoud, who is a respected scholar in Islamic studies and eastern languages from Baghdad, Iraq, minor differences due to interpretations among the various schools of law in Islam, had negligible impact on matters related to building and urbanism, as far as he can determine. Hence, the overall lessons and insights acquired from the Maliki experience would apply to most cities and settlements in the Islamic world.

(3) This principle originates in the famous Prophet's saying "Do not harm others or yourself, and others should not harm you or themselves."

(4) A good example of one the Prophet's decrees regarding the equitable use of rain water is that the flow of scarce water be measured to the ankles by the user of the higher ground, then sent to the lower ground.

(5) The following verse from the Quran is one of the important sources for regulating the respect of privacy: "Say to the believers that they should lower their gaze and guard their modesty, that will make for greater purity for them, and God is well acquainted with all that they do." 24:30

(6) The following saying of the Prophet is one of the sources for this principle: "A neighbor has pre-emption rights over his neighbor's property. If they share common access and the neighbor is absent, then the other should wait for his return."

(7) The ultimate source for this principle is from the Quran: "You are the best nation ever brought forth to men, bidding to honor, and forbidding dishonor, and believing in God. Had the people of the Book believed, it were better for them; some of them are believers, but the most of them are ungodly." 3:110

(8) Although the following saying relates to a specific act and source of public nuisance, its principle applies generally: "If a man is walking in a street and finds a branch of thorns and removes it, then God will thank him and forgive him."

(9) An example of this vocabulary—for the dwelling scale in the traditional setting of the Tunis region—is offered on pages 128 and 129 in the monograph entitled Sidi Bou Sa'id, Tunisia: A Study in Structure and Form, edited by Besim S. Hakim, Nova Scotia Technical College, Halifax, Canada, 1978.

(10) This practice is followed to this day by most communities in the Muslim world.


(14) Muhtasib is a traditional Muslim administrative official with various "urban" duties including those of checking on weights, measures, and fair prices.

(15) In traditional Islamic architecture we find many examples of fine designs of upper-level windows, particularly those facing primary streets and public areas. The "mashrabiyya" is the most striking example. It is basically a bay window from primary upper-level rooms, covered with wooden lattices to prevent visual penetration from the outside, but it allows the occupants to see out. Built-in benches were usually incorporated into these windows. Across the Islamic world, we find many design varieties of this basic concept and they provide excellent precedents to learn from. For examples from the Tunis region, please refer to Chapter 4 of the author's monograph Sidi Bou Sa'id, Tunisia: A Study in Structure and Form (1978).

(16) "Muslims are partners in three things: water, pasture, and fire."