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**OPEN SPACE IN  
HUMAN  
SETTLEMENTS:  
THE LESSON FROM  
THE ISLAMIC  
TRADITION**

**CONTEMPORARY  
DESIGN CONSIDERATIONS FOR  
OPEN SPACES IN ARAB-MUSLIM  
HUMAN SETTLEMENTS IN THE  
MIDDLE EAST**

ONTVANGEN

22 JAN, 1990

CB-KARDEX

**Proefschrift**

ter verkrijging van de graad van  
doctor in de landbouwwetenschappen,  
op gezag van de rector magnificus,  
dr. H.C. van der Plas,  
in het openbaar te verdedigen  
op dinsdag 9 januari 1990  
des namiddags te vier uur in de aula  
van de Landbouwuniversiteit te Wageningen

154-513235

## STELLINGEN

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1) Ontwerpen van open ruimten in nederzettingen in de arabische moslim-regio in het Midden Oosten zijn voor gebruikers en opdrachtgevers vaak onbevredigend als bij ontwerpers het inzicht in ontwerpoverwegingen, gebaseerd op islamitische waarden, ontbreekt.

*Dit proefschrift*

2) Het hedendaags ontwerpen van open ruimten zou zich moeten richten op het scheppen van condities voor het voortbestaan van de arabische moslim-maatschappij. Het kan daardoor beschouwd worden als een proces dat bepaald wordt door voortdurende aanpassing van bestaande situaties. Deze veranderingen zijn een gevolg van sociaal-religieuze tradities en economische en politieke veranderingen waarbij nuttigheid en functionaliteit belangrijker zijn dan de visuele beleving van de omgeving.

*Dit proefschrift*

3) De islamitische les over privacy in relatie tot het omgevingsontwerp houdt in, dat een ontworpen omgeving aan mensen de mogelijkheid zouden moeten bieden om de privacy van anderen te waarborgen.

*Dit proefschrift*

4) Omdat de islamitische cultuur gekarakteriseerd wordt door een veelheid aan subculturen kunnen specifieke ontwerpmodellen voor de buitenruimte in het

algemeen, in de arabische moslim-regio van het Midden Oosten, niet gegeven worden.

*Dit proefschrift*

5) De fysieke, gebouwde omgeving waarin de culturele en religieuze arabische moslim-waarden tot uiting komt is veelzijdig van karakter. Deze is definieerbaar in sociale termen maar niet in specifieke islamitische vormen.

*Dit proefschrift*

6) De identiteit van stedelijke omgevingen wordt in hoofdzaak bepaald door de resultante van de wisselwerking tussen mens en plaats en niet door de vorm. Deze opvatting kan beschouwd worden als de uitdaging voor het hedendaags ontwerpen van open ruimten.

*Naar aanleiding van uitspraken van Kuban in zijn artikel "Conservation of the Historical Environment for Cultural Survival", Aga Khan Award, Aperture, 1983.*

7) De betekenis die door gebruikers aan de open ruimte wordt toegekend, verklaart de redenen waarom ze zich daar bevinden. Open ruimten moeten daarom een of ander praktisch en/of emotioneel doel dienen, en geven uitdrukking van bepaalde gedragingen die gebaseerd zijn op associatieve kwaliteiten van die ruimten.

*Naar aanleiding van uitspraken van Rapoport in zijn boek "Public Streets for Public Use", 1987.*

8) Het ontwerpen van open ruimten moet niet gebaseerd zijn op de veronderstelling dat

ontwerpen in de islamitische wereld bepaalde vormen of tekens zouden moeten reproduceren die als islamitisch aangemerkt kunnen worden om daarmee de islamitische cultuur van westerse of oosterse culturen te onderscheiden.

*Naar aanleiding van uitspraken van Mahdi in zijn artikel "Islamic Philosophy and the Fine Arts", 1983.*

9) De maatschappelijke ontwikkeling in het Midden Oosten wordt steeds meer beïnvloed door de technologie. Het probleem is echter niet die technologie zelf, die zonder meer een integraal onderdeel vormt van ieder ontwikkelde maatschappij, maar de overheersing van een ideologie die toestaat dat technologie een oncontroleerbaar en maatschappij-vernietigende faktor wordt.

*Naar aanleiding van uitspraken van Kuban in zijn artikel "Conservation of the Historic Environment for Cultural Survival", 1983.*

10) Een samenhangende en zinvolle ontwerpbenadering van de fysieke omgeving moet zowel op het verleden als op de toekomst inspelen, waarbij de gebruiker een eigen plaats inneemt.

*Naar aanleiding van een uitspraak door een student van de King Faisal Universiteit in 1987, Dammam, Saoedie Arabie, "The future of environmental design for the Arab-Muslim world lies in a new interpretation of the past, and it is essential to link the contemporary design concepts with the traditional concepts".*

11) Om te voorkomen dat het stedelijk weefsel in kwaliteit achteruitgaat moeten ontwerpen aanpasbaar zijn aan toekomstige ruimtegebruikseisen van de bevolking.

*Naar aanleiding van uitspraken van Arkoun in zijn artikel "Islam, Urbanism, and Human Existence Today", 1983.*

12) De in dit proefschrift behandelde ontwerpoverwegingen kunnen bijdragen aan een open ruimteontwikkeling die er toe leidt dat gebruikers en opdrachtgevers van moderne ideeën zullen profiteren, in plaats van er door te worden gehinderd.

13) Omdat het ontwerpen van open ruimten sterk afhankelijk is van de interpretatie van hedendaagse 'waarneembare' noden van gebruikers, dient de noodzakelijkheid van 'goede ogen' voor zowel ontwerpers als besluitvormers niet onderschat te worden.

*"Was ist das Schwerste von allem?*

*Was dir das Leichtste dunkel.*

*Mit dem Augen zu sehen.*

*Was vor den Augen dir liegt" [Goethe].*

*Pieter W. Germeraad*

*Open ruimte in nederzettingen: de les uit de islamitische traditie.*

*Nederland, Wageningen, 9 januari 1990*

*To my mother and father,  
and my friends in Holland, Turkey and Saudi Arabia*

## ABSTRACT

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Germeraad, Pieter W.; Open Space in Human Settlements: the Lesson from the Islamic Tradition [Contemporary Design Considerations for Open Spaces in Arab-Muslim Human Settlements in the Middle East]; Doctoral thesis; Agricultural University; Wageningen, Netherlands 1989.

The pressure on the development of adequate open space systems in the Arab-Muslim countries in the Middle East is growing due to: massive migration to the cities, changes in the patterns of life and social networks, and an increasing growth in population. This process results in the development of new residential areas and the upgrading and redevelopment of existing residential quarters. Since modern western and traditional design approaches are often unsuited to the contemporary needs of the Arab-Muslims, these developments require a 'new' approach for the design of open space in these countries.

To contribute to an appropriate contemporary open space design approach a series of design considerations is developed which might form a open space design language for settlements in the Arab-Muslim region in the Middle East.

In order to derive this language the factors which affect the design of open space and the way modern open space has evolved from the traditional one, are described and analyzed. Attention is given to the application of

## SAMENVATTING

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Germeraad, Pieter W.; Open ruimte in nederzettingen: de les uit de islamitische traditie [Hedendaagse ontwerp overwegingen voor open ruimten in arabische moslim-nederzettingen in het Midden-Oosten]; proefschrift; Landbouw-universiteit; Wageningen 1989.

In de arabische moslim-landen in het Midden Oosten is de druk op de ontwikkeling van geschikte open ruimtesystemen groeiende als gevolg van: de grote migratie naar de steden, veranderingen in leefpatronen en sociale netwerken en sterke groei van de bevolking. Dit proces leidt tot de ontwikkeling van nieuwe woonwijken, de renovatie en/of 'vernieuwbouw' van bestaande woongebieden. De moderne westerse en traditionele ontwerpbenaderingen geven vaak geen oplossingen voor de hedendaagse problemen van de arabische moslims. Een 'nieuwe'/hedendaagse ontwerpbenadering voor open ruimten in stedelijke gebieden is daarom noodzakelijk.

Om een bijdrage te leveren aan deze ontwerpbenadering is een stelsel ontwerpoverwegingen ontwikkeld die gezamenlijk een 'ontwerptaal' voor de regio zouden kunnen vormen.

Voor de ontwikkeling van deze taal zijn de factoren die het ontwerpen van open ruimten beïnvloeden en de wijze waarop moderne open ruimten zich uit de traditionele open ruimten

traditional and modern design concepts, and the linkage of open space forms, layouts and functions of open spaces to life patterns, beliefs and desires in the context of their setting and the culture of the Arab-Muslim region in the Middle East.

The author hopes that the results of this study may contribute to the 'dialogue' between users and open space, by which the establishment of meaningful and coherent open space systems is the main goal. A process which is, however, only achievable as both users, designers and decision-makers understand the language of open space. □

ontwikkeld hebben beschreven en geanalyseerd. Aandacht is hierbij geschonken aan de toepassing van traditionele en moderne ontwerpconcepten en de relatie tussen enerzijds de vorm van open ruimten, de layout en de functies en anderzijds leefpatronen, geloof en wensen in de culturele context van de arabische moslim regio in het Midden Oosten.

De auteur hoopt dat de resultaten van deze studie mogen bijdragen aan de 'dialogue' tussen gebruikers van de open ruimte en de open ruimte zelf, waarbij het streven is gericht op het tot standkomen van betekenisvolle en samenhangende open ruimte systemen. Dit proces kan echter alleen plaatsvinden als zowel gebruikers, ontwerpers en besluitvormers die bij de ontwikkeling van open ruimten betrokken zijn de 'taal' van de open ruimte verstaan. □



## ACKNOWLEDGEMENT

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Amongst those I am indebted are Prof. H. van Leeuwen and Prof. M. Vroom of the Agricultural University in Wageningen, the Netherlands, and Prof. Dogan Kuban of the Technical University of Istanbul, Turkey, to whom I am most grateful for their comments and research suggestions. Also their confidence in me, their personal concern and their active support of my work I will remember with thankfulness.

Moreover I thank Jack Burroughs and Loes Schedler for proofreading the manuscript, and Besim Hakim for his suggestions in the initial phase of my thesis writing.

This thesis includes many figures and photographs, several of which have been prepared by others. I thank them and also express special thanks to the students of the Agricultural University at Wageningen, The King Fahd University of Petroleum and Minerals at Dhahran and the King Faisal University at Dammam, who provided material for this research.

Finally I thank my silent partners in this venture my mother, father and Ria, and friends, Gerry, Martin, Herman, George, Nur, and Seba for their support. I appreciate their ongoing help and encouragement. ☐

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## INTRODUCTION

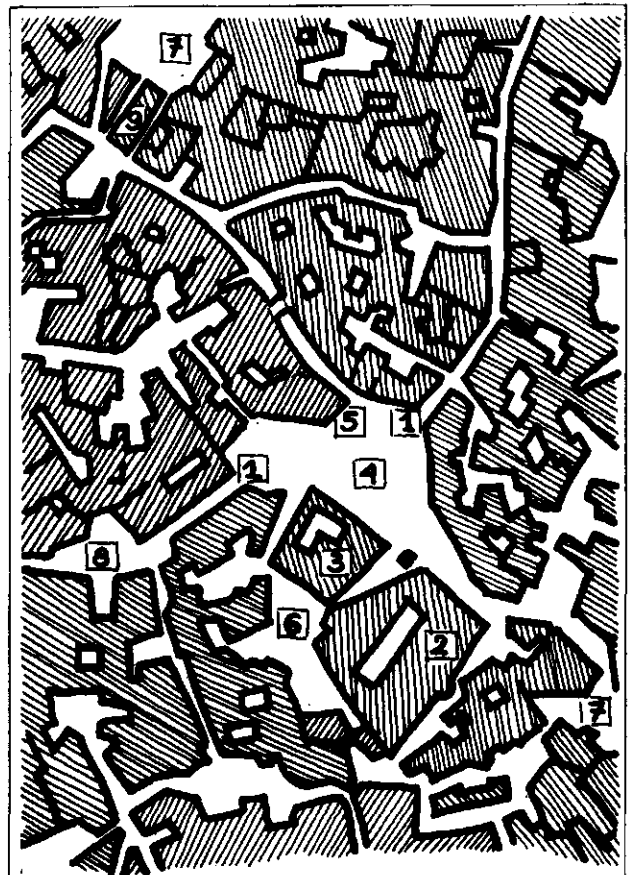
### 1.1 STATEMENT OF NEED

In the past the design of open space in the Arab-Muslim countries in the Middle East was based on certain practical principles and guidelines derived from an interpretation of the essence and spirit of Islam, The Holy Koran and Sharia [Islamic Divine Law]<sup>1</sup>. Principles and guidelines for the layout of open spaces had taken shape during the development of the Muslim conquest and culture after the seventh century, and were essentially derived from the right of privacy and the exclusion of women from public life. These principles and guidelines were primarily related to housing and access [streets and courts], and, at the same time, formed a frame-work for adjudicating related conflicts. [Hakim, 1986]

The leading design principle of urban texture at that time seems to be the articulation of space, in which form not merely followed function but function and Islamic philosophy defined space. Spatial layout of urban texture was, in the past, a clear hierarchy of spatial linkages, and in balance with the environmental limitations and potentials of the site. Configuration of human settlements was based upon a few elements such as,

<sup>1</sup> Principles and guidelines were based on interpretation as the Koran and the Hadith do not pronounce anything special about design of the physical environment [oral statement by Prof. Dogan Kuban, Technical University, Istanbul, 1988].

individual dwellings, blind alleys, doors, courts, and paths. Primary space systems in cities were basically related to the main flow of bazar or suq routes which began at the city gates and frequently continued through the city to opposite gates or culminated in a nodular space of the main mosque, the palace and other public buildings [figure 1.1].



Urban pattern in the center of the old city of Unayzah [1368].

- |                       |                    |
|-----------------------|--------------------|
| 1 main entrance       | 6 handicraft area  |
| 2 main mosque         | 7 commercial plaza |
| 3 justice palace      | 8 handicraft area  |
| 4 main square         | 9 mosque           |
| 5 main commercial suq |                    |

FIG. 1.1 Plan showing the traditional open space system [Beech Group].

Courtyards, streets, and other open spaces provided a contribution to the amelioration of the micro-climate in the city [figures 1.2 and 1.3] [Gabriel, 1984 and 1987].

Today, however, the shape of open spaces in contemporary Arab-Muslim human settlements in the Middle East, becomes more and more the product of a design process based on economics and application of foreign design models imported from abroad [i.e. the United States, England or France], under the flag of "progress" and "modernization"; instead of a product achieved by a synthesis of historical and modern attainments [Aga Khan Award for Architecture, seminar proceedings 1978-1986]<sup>2</sup>. These may seem to push aside ethical and aesthetical values by rational and economic values or by failure to understand, or the ignorance of, the specific values of Islam and the Arab-Muslim society regarding the use of natural resources in environmental design. It may also indicate the misunderstanding and misinterpretation of the Arab-Muslim built environment. The results are new and revitalized outdoor environments which are often ecologically unbalanced, and incongruous with people's [users] experiences and values, which are firmly rooted in their culture. In general, causes can be summarized as:

- Emphasis on data in which man-made and natural environmental features specific to Arab-Muslim environments are mostly

2] The implications and often unavoidableness of "progress" and "modernization" on open space design are reviewed and elaborated in paragraph 2.2.2, "modern concepts".

neglected or totally ignored [figure 1.4].

- Emphasis on structure and form, and introduction of foreign concepts [imposed images], instead of emphasis on use [figures 1.5 and 1.6] and social-religious responsiveness.

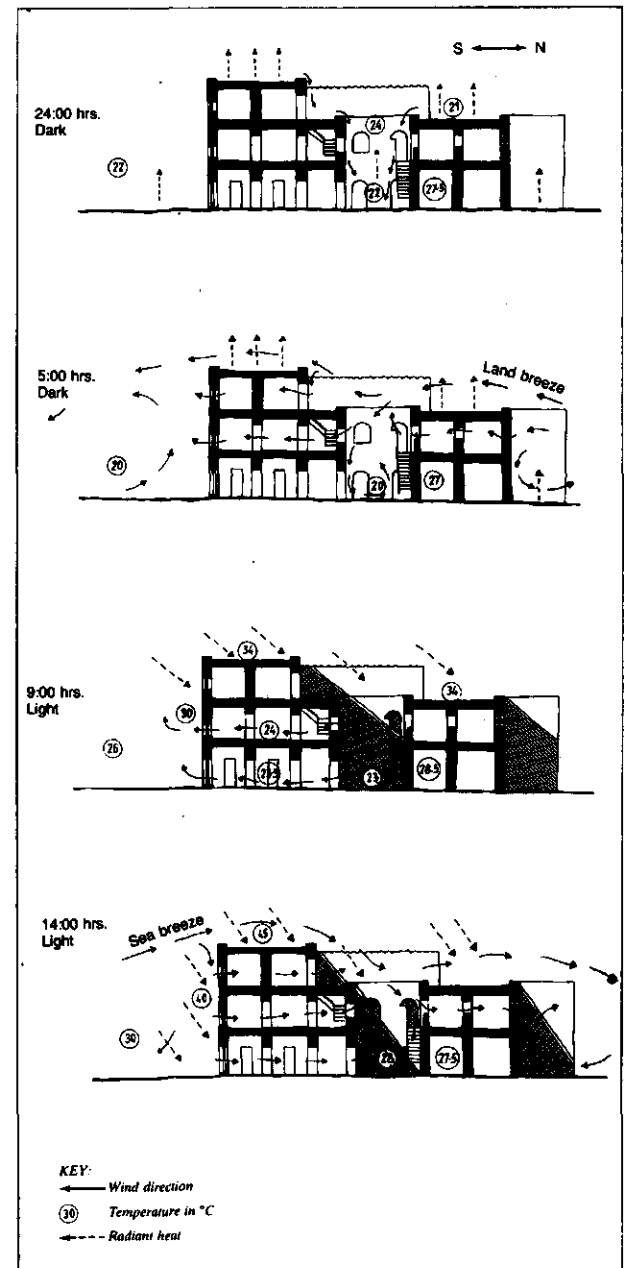


FIG. 1.2 Example of the cooling effect of a courtyard, on different times during the day [Khan, 1978].

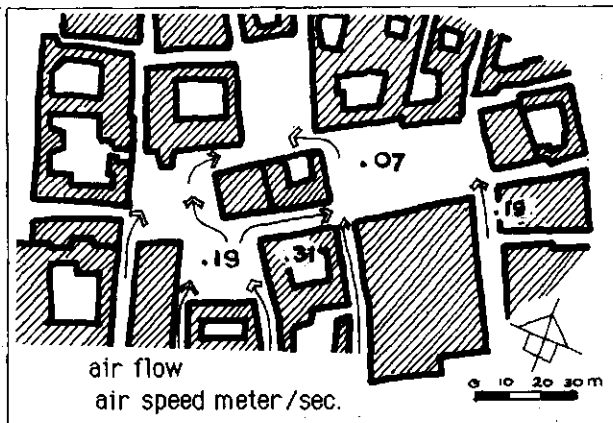


FIG. 1.3 Narrow streets [2-3 meters wide] accelerate wind flow which ameliorates the micro-climate. The effect of narrow alleys and relative large open space on air flow is illustrated in the Bastaka quarter in the city of Dubai, United Arab Emirates. Air speed in open spaces decreases, since they act as negative pressure pockets [Gabriel, 1986].

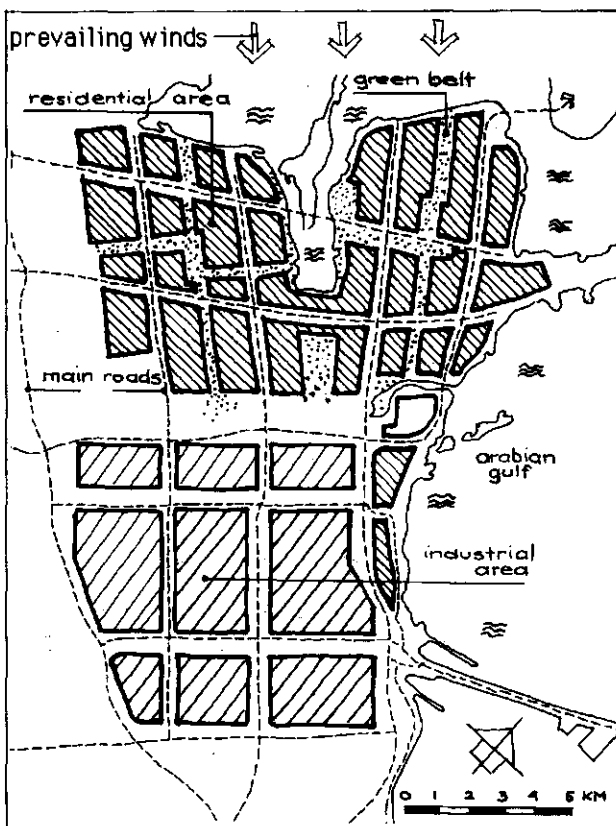


Fig. 1.4 Jubail, Saudi Arabia. Main open corridors situated in the direction of the prevailing winds, cause sandblow problems in the residential and industrial areas.



FIG. 1.5 Street in Cairo, Egypt. High curbs make the use of pedestrian walkway difficult.

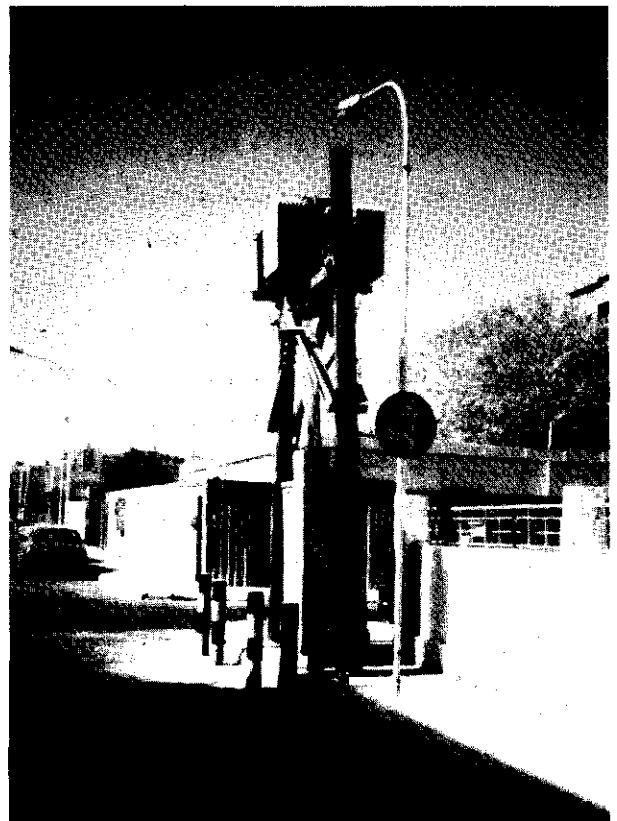


FIG. 1.6 Street in Khobar, Saudi Arabia. Obstructions by public facilities affect the continuity of pedestrian walkways. [Hamilton, 1987]



## 1.2 THE PROBLEM OF CONTEMPORARY OPEN SPACE DESIGN

As a practising landscape planner and designer in Saudi Arabia the author of this study doubted the general ability of private environmental planning consultants and governmental planning departments at municipal and inter-municipal level to cope with design problems in the urban open space in the specific situation of the Middle East.<sup>3</sup> Natural-physical and biotic factors and resources, such as climate, soil, hydrology and natural vegetation are often ignored as design considerations, in spite of Sharia indications which emphasize a balance between conservation and optimal beneficial use of natural resources [Sardar, 1985]. A thorough, systematic search for Islamic design considerations concerning urban open spaces, both in the physical and functional sense, seems missing. In general, the Islamic culture and heritage seems undervalued in designs for open spaces in human settlements, although several attempts are made to develop a better understanding of these values and the

<sup>3</sup> I was confronted with these shortcomings in the design of open spaces in the period between 1980 and 1987 as a consultant of the Netherland Airport Consultants [NACO] and Assistant Professor at the King Fahd University of Petroleum and Minerals in Dhahran and the King Faisal University in Dammam, Saudi Arabia. During my stay in Saudi Arabia I already expressed my worries about the undervaluing of the specific needs of the users of open spaces in the Middle East partly pronounced in a paper "How to Design for more Ecologically Compatible Environments" [Eight Conference of the Arab Towns Organisation, March 1986].

behaviour of Arab-Muslim people in urban areas [Hakim, 1986; Akbar, 1984; Mavrakis, 1984 and Aga Khan Award for Architecture, seminar proceedings 1978-1986].

Central questions related to this problem are:

- What should the relationship be between contemporary Islamic design concepts for open spaces in human settlements and the Islamic religion and culture?
- What are specific Islamic design conditions, criteria and guidelines for developing open spaces in human settlements, with an eye on the design of more comprehensive urban environments?<sup>4</sup>

## 1.3 RESEARCH LIMITATIONS AND GOAL

Before elaborating the questions given above it is necessary to determine the scope of research by:

- a) Indicating the line of approach.
- b) describing what is open space.
- c) describing which countries are part of the Arab-Muslim region in the Middle East.

### Line of approach

The first step is to establish the point of view, such as planning, engineering, design, etc., through which the problems of open space will be approached. As most problems seem to be

<sup>4</sup> Comprehensive design: Design that takes into account the social, cultural, religious, biotic [living nature], abiotic [non living] and historical aspects of the site and the design object. Design object is in this context considered: The area or group of persons for which a plan is made. [Staveren van, e.o., 1980]

related to physical design conceptions and users needs, the author decided to approach the problem from a design point of view since design is involved in the appearance and composition of open space in relation to peoples/users needs and wishes. "Appearance" is in this context is mainly related to "useful value" [Van Leeuwen, 1980]. Design can be described as a creative process which is based on symbiosis of several aspects of knowledge. The most important ones for the author are: knowledge of materials and their construction possibilities, knowledge of geographical situation and climate, knowledge regarding expected users behaviour, experience of open space by users, civil-engineering [e.g. irrigation, drainage], hygiene, social-climate and economics. Designers should also understand the role of hierarchy, patterns, and ordering related to form of open spaces. In addition to hierarchy and pattern, 'beauty' and scale, as important parts of the world of forms, are to be considered. They are part of the "frame of reference of the world of forms" [Van Leeuwen, 1980]. Support for the design approach used here is also found partly in the description of design by Trancik in which he states "Without design, the modern landscape would evolve in the absence of judgements on aesthetics, visual quality, and social concern. Design strives to create order, beauty, and scale. Design is the fundamental skill required to structure and restructure urban space " [Trancik, 1986]. Tranciks statement regarding design is, however, limited as he does not indicate in this definition the importance of functionality, usefulness and meaning in relation to design of open space.

## Open space

The outdoor environment exists as public and private open space and in much of the Middle East often, as a large portion of vacant, unused land. The latter is mainly caused by the suburbanization movement of the last decades which drew industries, workshops and people to the periphery of settlements. It is also caused by the siting of buildings and groups of buildings [i.e. compounds] mostly as isolated objects with no relation to the urban fabric often creating, unused vacant spaces. Thus open space in this study is described as:

*" Space enclosed by masses of built and natural elements creating open areas which are used by people for specific and/or not specific living and work purposes and which make a positive or non-positive [neutral or negative] contribution to the surroundings and/or users in the sense of being useful and meaningful".*

Two main types of open space can therefore be distinguished:

- Open spaces with a positive contribution to the surroundings and/or users [figures 1.7 and 1.8 ].
- Open spaces with a non-positive contribution to the surroundings and/or users [figures 1.9, 1.10 and 1.11].

Figures [1.7 to 1.11] illustrate the two types, of open space, and give a first and general impression of the "status" of open space in human settlements. In practise, as shown



FIG. 1.7 Street in Cairo, Egypt. An example of the integration of the public life of the street and the private houses above. Shops, restaurants and open spaces form a transition between the street and the dwelling units. Tent structures provide shade for the shops and street and emphasize privacy of the houses.



FIG. 1.8 Central square King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia. Arcades and terraces around the square form a transition between the public activities of the square and the more private educational activities of the university buildings in the background. Planting will provide shade on the square in the future.

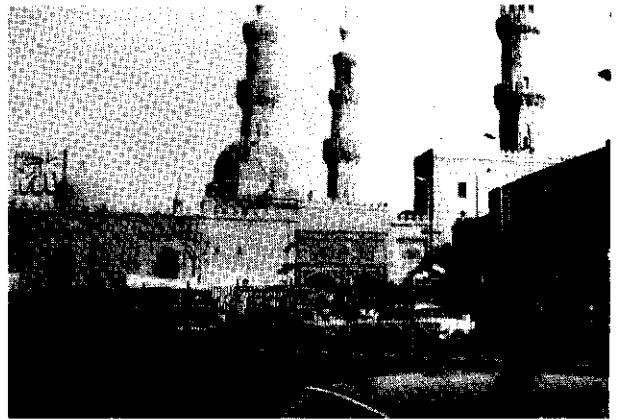


FIG. 1.9 City highway, Cairo, Egypt. Visual and functional disconnection of urban structure.

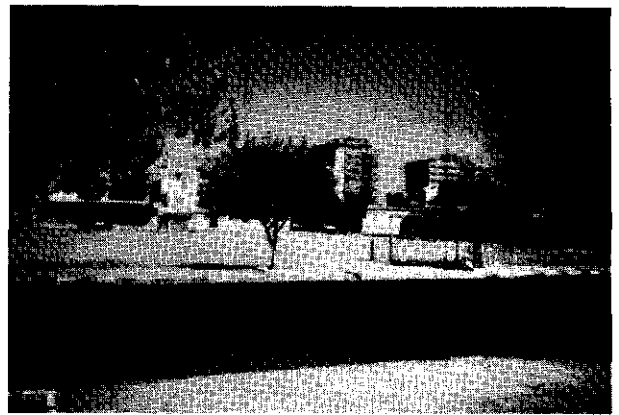


FIG. 1.10 Vacant lot, AlKhobar, Saudi Arabia. Interruption of the city fabric, but at the same time unwantedly creating a open leisure place for the people [ball plays].

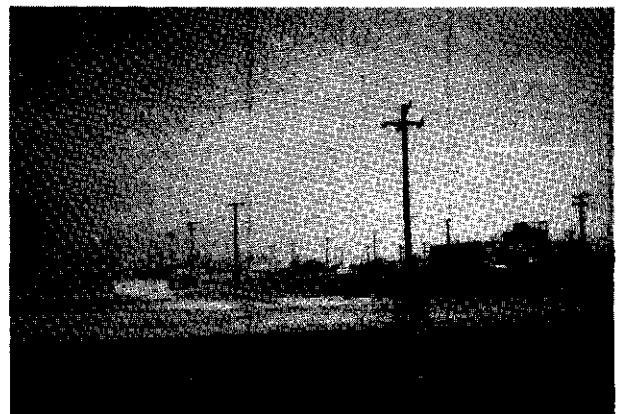


FIG. 1.11 Residential area, Al Kafji, Saudi Arabia. Isolated building activities create vacant open spaces which prevent development of directional continuity and sufficient enclosure.

in the figures, the designer dealing with open spaces is frequently confronted with combinations or just parts of the open space types, given above. The design implications of the above description of open space are discussed in paragraph 5.2. This paragraph includes design considerations which might determine the "status" and as such the quality of open space.

### Arab-Muslim region in the Middle East

The study area will include the nations<sup>5</sup> of the Arab-Muslim<sup>6</sup> world in the Middle East. The Arab World in this study is defined in accordance with the conception of Peppelenbosch and Teune who state that the Arab World includes a region with a specific culture and identity, roughly extending from the Atlantic Ocean to the Arabian Gulf forming one community. The specific identity of this region is rooted in the common Arabic language and religion [Islam] and in a common Arab culture resulting from an Arab history [Peppelenbosch and Teune, 1981] [Weiss and Green, 1987]. Although the region has many sub-cultures<sup>7</sup> and ethnic minorities as

5] Nation is used here as: An agglomeration of persons who feel that the set of experiences, customs, interests and expectations they share bind them all in one people [Weiss and Green, 1987]. Rather than a body of persons associated with a territory and organized under a government.

6] Muslim: Someone who is subject to God's will and obeys to the rules God has dictated to mankind [Peppelenbosch and Teune, 1981].

7] The region is split in several nation-states, that each territorilise their history of Islam and fabricate national cultures.

Berbers, Jews, Persians, Turks, Indians and Armenians, generally it can be defined as one Arab-Muslim cultural area, in which people are aware of their unity. They all feel themselves part of one Muslim community, the Umma. In outward form the Umma was originally a federation of clans consisting of eight Medinan clans plus the Prophet's followers from Mecca. The Umma was, however, more than a federation in the traditional sense. The bond which united the member clans was religion [Islam] and not only sheer expedience. It formed a pattern of a formal incorporation of groups into Islam. As a confederation of groups bound together by allegiance to God and his Prophet Mohammed, the umma was the body politic of Islam. As the revelation continued, the Umma became increasingly subjected to the norms and values of Islam through which new patterns of life began to emerge. For example norms regarding the taking care of weak members of the society, inheritance, marriage and forms of worship. In short, the Umma was, in accordance with the Prophet's plan, becoming the means through which a new order of society could be fashioned in which personal faith, together with obedience, could readily emerge [Weiss and Green, 1987].

Based on the previous considerations, this study will include the following Arab-Muslim countries: Egypt, Iraq, Jordan, Kuwait, North

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Therefore Islam cannot be considered as "an operative idea in their overall art of living" [Haider, 1986]. Arkoun describes that the culture of the region under study consist of "several cultural trends within an Islamic context" [Arkoun, 1986].



Cartoon by Yousef Al-Towim [Albenaa, October-November, 1985]

In order to illustrate the impact of factors and concepts, examples from the past and the present are given on the overall settlement and/or site level. In the cases where examples could not be found in the region under study, examples from other Arab-Muslim regions are used.

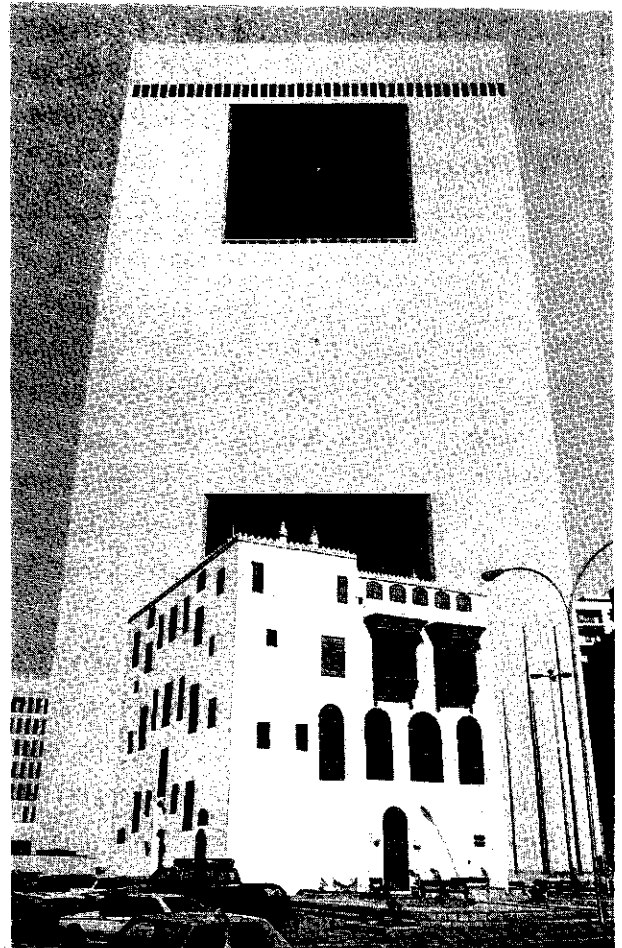


FIG. 2.2 Surrounding of National Bank, Jeddah, Saudi Arabia. The original physical pattern of the old city is denied. The layout of the bank [building and surrounding] fragments and confuses the structure of the old city and creates disorientation.

## 2.1 FACTORS DETERMINING ARAB-MUSLIM OPEN SPACE DESIGN IN THE MIDDLE EAST

In this paragraph tradition, economic, political and natural environmental factors are discussed as these can be considered as main coincidences<sup>1</sup> acting on form, layout and function of open space [Rapoport, 1969].

<sup>1</sup> Coincidences is used since these factors can not be considered forces with causal relations [Rapoport, 1969].

Emphasis is given to what these factors may attribute to open space design and how they are related to the Arab-Muslim conception of life, social-organization, concepts of territoriality [expressing identity], user's needs and local and regional cultures.

### 2.1.1 TRADITION

As stated in paragraph 1.3, inhabitants of the region can be considered as belonging to one community bound together by a common Islamic religion and Arab history. The region can generally be seen as one Arab-Muslim cultural unity; however, within this overall cultural framework, some regional differences may occur due to the existence of ethnic minorities [for example Turks, Berbers, Indians, Persians and Jews] [Peppelenbosch and Teune, 1981] and also caused by differences of interpretation of Arab-Muslim cultural aspects by various groups, like nations and tribes [Abu-Lughod, 1983].

Culture in this respect is considered as "A system of symbols and meanings in terms of which a particular group of people make sense of their world, communicate with each other, and plan and live their lives in a particular stage of civilisation" [Metge, 1976 and Merriam-Webster, 1974]. This definition implies that culture can be conceived as a process that keeps the community alive and in which stages of civilisation, each with its own symbols, meanings and physical manifestation, succeed

each other over time. The main mechanism which is responsible for these changes over time and in its physical manifestation [including urban open space] is found in the Arab-Muslim traditions within the framework of the Islamic legal system.

#### Tradition as a physical and functional cultural determinant of urban open space

The word "tradition" is used in several ways. In the Merriam-Webster dictionary [1974] it is described as "the handing down of beliefs and customs". To indicate the way how beliefs and customs are handed down, the additives "oral" or "written" can be added.

B. Kubiak in his book about Fustat in Egypt [Kubiak, 1987] defines tradition as "to hand down customs", which he specifies by using adjectives as local, historical and religious. He adds, however, that during the early times of Islam there was no sharp distinction between historical tradition and the religious one.

Akbar defines tradition as "the sum of the similar actions over a certain period of time" [Akbar, 1984].

The Hadith which encompasses the traditions or sayings of the Prophet Mohammed, one of the two fundamental sources for Islamic behaviour and thinking, is called the "Great Tradition" by Kubiak. He also describes the Hadith as an "attributable" tradition [Kubiak, 1987], by which he possibly wants to stress that it forms the origin of many patterns of behaviour or action. An extended description of tradition is given by Congar in which he expresses that: Tradition carries with it not

only logically formulated ideas, it also embodies a life that includes at the same time sentiments, thoughts, beliefs, aspirations and actions. Individual and collective effort can infinitely draw from it without exhausting it. Consequently it implies the spiritual communion of souls that feel, think and will in the unity of a common patriotic or religious ideal; and by the same token, it is a condition of historical progress in so far as it is handed down from one generation to the other. Tradition is the spring which creates unity and continuity in behaviour of societies. Without tradition any constructive synthesis is impossible and as tradition is changing over time it will outlive every reflective analysis [Congar, 1963]. In relation to Congar's mention of continuity and progress, it is important to mention the two questions raised by Arkoun:

1) "Is the contemporary Islamic tradition equal to the original Divine Tradition [Hadith] conceived at the beginning of Islam?"<sup>2</sup>

2) "Or, is the Islamic tradition the result of a socio-historical process based on the original Tradition [Hadith] but always coincident with other traditions, or modified by successive "innovations" or "modernities"? [Arkoun, 1986]

These questions are certainly not yet answered, as is illustrated by the existence of

2] This first question is only a theoretical one, it never existed in the Muslim world, as it means total stagnation, or death, if not changed through re-interpretations [oral communication by Prof. Dogan Kuban, Technical University, Istanbul, 1988].

present Islamic movements, which vary between "orthodox" [implementation of the Hadith text as conceived] and "modern" [integrating changes imposed by history].

Based on these diverse interpretations of the word tradition in this thesis, it is defined as "a complex of human thoughts, beliefs and sentiments which affect human behaviour and actions and are accepted by society in a certain period of time and which find their roots in handed down oral or written information".

### **Islamic law, sustainable framework for tradition**

Tradition, and in connection with this the design of open spaces is, as mentioned before, strongly influenced by principles and guidelines of Islam and are derived from the two fundamental sources of Islamic law:

- 1) The Koran which embodies God's law.
- 2) The Hadith, the traditions or sayings of the Prophet Mohammed<sup>3</sup> [Bucaille, 1977; Weiss and Green, 1987].

Based on these sources Muslims have tried to establish, from the beginning of the Muslim era, an all-encompassing code of law, the

3] A very large number of collections of the Prophet's words and deeds, Sunnah, is embedded in a collection of traditions, the Hadith. The Hadith is used for interpretation of the Koran and to determine rules for situations which are not clearly and precisely expressed in the Koran. The exact meaning of the word Hadith is 'utterance' but it is also customary to use it to mean the narration of his deeds [Bucaille, 1977; Peppelenbosch and Teune, 1981].

Sharia or divine law, which should regulate all aspects of Islamic life<sup>4</sup>. The Sharia is a vast body of regulations; the knowledge of which was cultivated by scholars, the ulama or "possessors of knowledge". However, the Sharia does not give a detailed code to mankind. Law codes are derived by the ulama through careful study and interpretation of the Koran and the Sunna [customs of the Prophet Mohammed]. Although the early [historically speaking] ulama were in full agreement on most major points of law, variations of opinion in matters of detail existed. Consequently different schools of law, or jurisprudence, emerged among them. In the eighth and ninth century six law schools had been developed. Four of these schools have survived till today and still form authoritative bodies for the jurisprudence in Arab-Muslim countries in the Middle East [Weiss and Green, 1987]. The four remaining schools are:

- The Hanafi school founded by Abu Hanifah [767] which covers parts of Syria.
- The Maliki school founded by Malik [795] which covers the Southern part of Egypt.
- The Shafii school founded by Imam Shafii [820] which covers Egypt, the Southern and Eastern part of the Arabian peninsula.
- The Hanbali school founded by Ahmad B. Hanbal [855] which covers the central part of the Arabian peninsula [Weiss and Green, 1977; Akbar, 1984].

It was this legal system, which constituted a common base for behaviour of the Muslim society in the Middle East, despite variations in explanation introduced by the four different schools of law [Abu-Lughold, 1983]. The differences between the various schools of law are, however, always differences within certain limits due to the sources used: Koran, Hadith and teaching of jurists [Akbar, 1984]. As such this legal system forms the sustainable framework for traditions which affect the use of open space in human settlements, and often direct its physical manifestation.

#### **Tradition basis of Islamic environmental ethic concept**

In Islam there is no division of ethics indicating moral principles for man's actions and behaviour, and law. The consequence of man's acceptance of Islam is arbitration of his conduct by Divine judgement as expressed in the Koran. This implies acceptance of Tawhid<sup>5</sup>. Tawhid dictates the acceptance of God as the only source of all values and provides guiding principles for all man's actions and behaviour, including ethical rules. The Islamic environment is controlled by two concepts: halal indicating what is beneficial, and haram indicating what is harmful]. A good expression of the two concepts in an environmental context is the interpretation given by Sardar. "Haram

4] An example of the exclusive use of Sharia [law] is found in Saudi Arabia. The Sharia has, however, never existed in its totality or without other codes of law or laws [Peppelenbosch and Teune, 1981].

5] Tawhid "exemplifies the unity of God: the recognition that there is one absolute transcendent Creator of the universe and all that it contains. Man is ultimately responsible for all his actions to him" [Sardar, 1985].



includes all that which is destructive for man as an individual, his immediate environment and the environment at large. The word destructive should be understood in the physical, mental and spiritual sense. All that is beneficial for an individual, his society and his environment is halal. Thus an action that is halal brings all-round benefits" [Sardar, 1985]. Shariah law thus provides ethical norms for the Islamic ethic concept which also guide problem-solving and decision-making processes regarding use of urban open space and behaviour in it. Several attempts have already been made to compile environmental design interpretations based on ethical norms derived from the Shariah. A good illustration of such an attempt is the personal interpretation of environmental ethics by Haider who argues that the ideals of an Islamic environment are based on three formative values:

- 1) Environmental sensibility.
- 2) Morphological integrity.
- 3) Symbolic clarity.

Within the context of design of urban open space these three values seem, according to Haider, to imply "giving respect to natural topography" and having "a sensitivity towards size, scale and quality, maintenance of private and public intimacy and an appropriation of human scale both in social systems [eg. neighborhood or district] and physical environment". Furthermore the Islamic urban environment, although physically bounded, must give an impression of infinite continuity by spatial integrity where "form follows space and space is

adopted to function" and it should show a continuity in both its purpose and form [Haider, 1984]. Finally morphological integrity dictates a sense of unity achieved "through the search for mutual orders of function, meaning, symbol, geometry, gravity, energy, water, movement" and by characterizing "parts to whole and whole to parts relationship -simultaneously differentiated and integrated" [Haider, 1984]. Theoretically, symbolic clarity can be achieved by encouraging "full expression of selfhood and identity without damaging the all compassing unity of Umma" <sup>6</sup> [Haider, 1984], which might be interpreted as respect for traditions and culture and herewith connected symbols, metaphors and allegories <sup>7</sup> which express Islamic life. When Haider's ethic concept is analysed from

6] "Theoretically" is added to the statement of Haider since examples of this kind of generalisation are rather difficult to find in the actual situation [remark Kuban, 1989]. The statement may not be derived directly from the religion but links, in the opinion of the author, religion and symbolic clarity as the unity of Umma is mainly based on religion [see page 7 and 8].

7] Symbol, metaphor and allegory might, in this sense, be defined as follows:

SYMBOL: Reflection which in essence is unified to that which is symbolized. The symbol is the cipher of a mystery or idea.

METAPHOR: Physical, written or oral manifestation, in which a word or physical manifestation, indicating one subject or idea, is used in place of an other to suggest a likeness between them.

ALLEGORY: More or less artificial figuration having no universal existence of its own. It can be considered as a rational operation [Ardalan, a.o., 1973 and Merriam-Webster, 1974].

the point of view of the Sharia it seems not fully correct since he mentions ethical and form/aesthetical considerations. Form/aesthetical considerations regarding physical manifestation of environments such as human scale, size, infinite continuity by spatial integrity, form continuity, geometry, quality and differentiation and integration of parts to whole, cannot, however, be found in the Sharia [verbal communication Kuban, 1987].

The Sharia contains only ethic concepts as how to act and how to behave. The relevant urban open space general ethic concept might be considered the "not creating harm for others" concept, by which use of open space and behaviour in it seems to play a major role [Akbar, 1984; Llewellyn, 1983; Burckhardt, 1976, Sardar, 1985 and student's studies King Faisal University, 1987]. This concept is in accordance with traditions regarding users responsibility, privacy, decency, modesty and respect for nature. Based on the above and on the critical remarks regarding Haider's ethical concept, the following Islamic ethical urban open space concept might be defined:

*"An open space design from the Islamic point of view implies giving respect to natural landscape ecological values and having sensitivity towards users responsibility, privacy, the institution of waqf, decency and modesty. Form and morphology of open space should result from application of these traditional values in design and thus create symbols or signs expressing:*

*-The all-compassing unity of Umma [rooted in the religion].*

*-Man's expected use of open space and his behaviour in it.*

*Specific regional ethical characteristics should be incorporated in design to express selfhood and identity of users<sup>8</sup>".*

Implications of the above ethical concept are elaborated in the next paragraph [traditions affecting open space design] and in paragraph 2.1.4 [natural environmental factors].

### **Traditions affecting open space design**

From the point of view of the development of open spaces the following three traditions should be evaluated:

- 1) Users responsibility.
- 2) Privacy [including decency and modesty].
- 3) The institution of waqf, a form of charitable endowment [Akbar, 1984; Llewellyn, 1983; Burckhardt, 1976; Egypt, Min. of housing and Reconstruction/Min. of planning, 1977].

### **1 Users responsibility**

Akbar states that the physical form of the traditional built environment is a result of the responsibilities enjoyed by individuals

<sup>8</sup> These characteristics, which might occur due to regional interpretation differences of ethical values [for example by different law schools], will generally not contradict with the overall Islamic ethical point of view as all Muslims belong to one Umma, subordinate to one and the same Koran [Akbar, 1984]. For differences in interpretation by law schools see also page 15.

regarding: ownership, control<sup>9</sup> and use<sup>10</sup> of properties. As mentioned before, responsibilities in the Muslim world are closely related to the Islamic legal system and has not changed much over a thousand years because the Islamic legal system is based on Koran and Hadith, which validity in any place or time should not be questioned<sup>11</sup> [Akbar, 1984].

In traditional human settlements open space patterns and their physical form can be mainly seen as the result of an autonomous synthesis<sup>12</sup> of users interests and environmental considerations regarding, for example, climate, soil and water. Users interests are related to both function and

9] Control: The ability to manipulate elements, without using or owning them [Akbar, 1984].

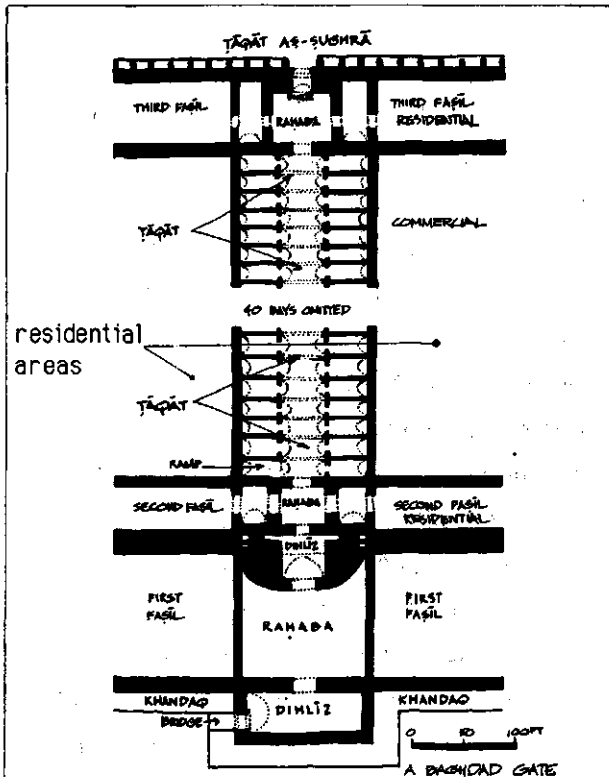
10] Use in Akbar's context is defined as: "The enjoyment of a property without controlling or owning it" [Akbar, 1984].

11] As far as responsibility is concerned the differences in opinion of the different schools of law can be neglected. As Akbar states "The variety of opinions and rulings, in different periods and regions, did not affect the traditional model of responsibilities since it is more related to the principles of the legal system than to the interpretation".

12] Akbar defines autonomous synthesis as: "The coexistence of properties in the unified form of submission in which properties are not regulated by outside parties. Each property is self-governed, owned and controlled by the largest residing party. It is internally controlled". Unified form of submission in this definition is: "The state of property in which all the claims -ownership, control and use- are enjoyed by one party such as a resident who controls and owns his dwelling" [Akbar, 1984].

form of open space. Decisions which were individually or collectively made by the involved and affected parties, mostly people who owned, controlled and used adjacent properties, were the ruling forces for "design" of open spaces. In general, open spaces were not subject to any rules issued by authorities. The collectively made decisions by the affected and involved parties were based on consensus, which implies that a change in the environment should never harm an individual or public [all Muslims together] interest. The responsibilities of the party who wanted to change the environment were found in the interpretation of the Divine Law by jurists and were related to use and physical changes of a property. The important fact is that decisions were made in accordance with ethical and religious norms and in principle without the interference of the ruling authority. In case of public needs regarding circulation or security, extension of mosques and opening of doors and windows, the authorities sometimes interfered. But real changes due to imposed regulations upon owners of property rarely occurred [Akbar, 1984].

Even towns created by a centralized authority, as for example al-Kufah [Iraq] 639, al-Fustat [Egypt] 640 and Baghdad [Iraq] 762, show that decisions regarding urban layout were mainly autonomously made by users. In general only the location of the town and main urban elements like mosques, security services, main thoroughfares and areas for occupation [khittahs], often tribal territories, seemed to be marked out.



Plan of a gateway showing residential areas and ring streets [Moholy-Nagy, 1968]

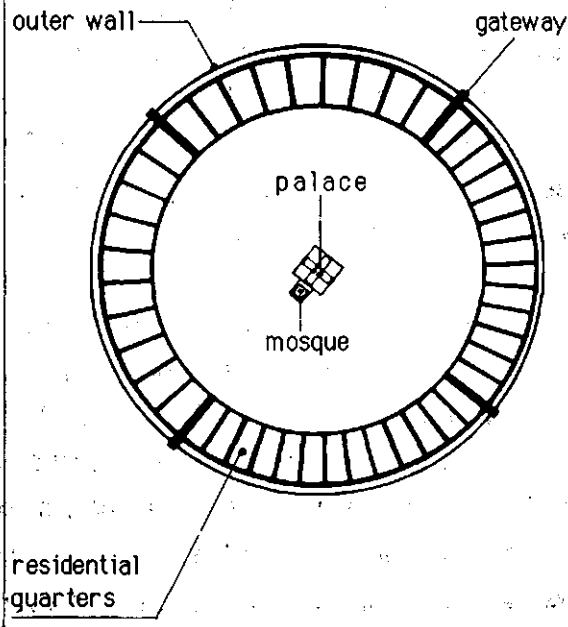


FIG. 2.3 Overall plan of Baghdad and a plan of a gateway. Both plans show the residential quadrants which were laid out by the occupants themselves [URPAC, 1982].

The areas between marked out elements were developed mainly as residential areas by settlers, mostly people belonging to one tribe [autonomous synthesis] [Akbar, 1984]. Figure 2.3 illustrates the above principle for the city of Baghdad. Akbar concluded that the physical pattern of traditional human settlements, with the exception of a few planned cities mentioned above, is rarely realized according to a scheme planned by central authorities. Expansions or changes are made over time by inhabitants, not randomly but according to rules regarding environmental responsibilities. The growth and shaping of human settlements, generally consisting of [re]-vivification of unowned land, is in fact caused by local decisions made by users. Another important conclusion by several authors is that streets in Muslim human settlements are mainly spaces left over from [private owned] buildings, created by dispute and agreement between users, and not the cause of the traditional urban fabric [Kuban, 1972 and Akbar 1984].<sup>13</sup> Spatial

13]. It should be mentioned that this is not only typical for Arab-Muslim countries. In ancient Europe open spaces like streets and squares were mainly left-over spaces resulting from building activities. Space in Europe was the invention of a late, more crowded age, the sixteenth and seventeenth century.

"The Greeks for example built their temples, etc. simply where they had a certain convenience, meaning and indication; it is controlled arrangement, but it is not controlled through open space techniques as we know them" [Smithson, 1973]. Temples, depending on their importance, often initiated the development of agora's, spaces used for meetings, markets and administration of justice [verbal communication Van Leeuwen,

consequences of this process are illustrated in figure 2.4 in which a hypothetical illustration of the growth of traditional human settlements is given.

Over time an important change in responsibilities regarding environment in Islamic human settlements has occurred, which is clearly illustrated in the ways the decision making process regarding open spaces changed. In the past most environmental decisions or changes were made directly by users and not by central planning organizations [authorities]. Physical forms were mostly a result of local decisions, made from the 'bottom' up.

In contemporary environments the influence of the public administration in the environmental decision making process has tremendously expanded. Governmental officials and their foreign consultants often determine the smallest details of design projects without hearing affected and involved parties [users]. For example consultancy sessions with present or future users do not take place. It seems that it is taken for granted that the state takes all the responsibility for the design of the environment<sup>14</sup>. The results of increasing

1988]. In this context with open space techniques is meant: zoning regulations, quantitative design principles for streets, squares, parks and so on.

14] Design circumstances with which I was confronted during my employment with URPAC, Urban and Regional planning and Architectural Consultants B.V., Rotterdam in Saudi Arabia [mainly airports], Kuwait [garden for fire brigade] and Abu Dhabi [recreation area] and as an advisor to the

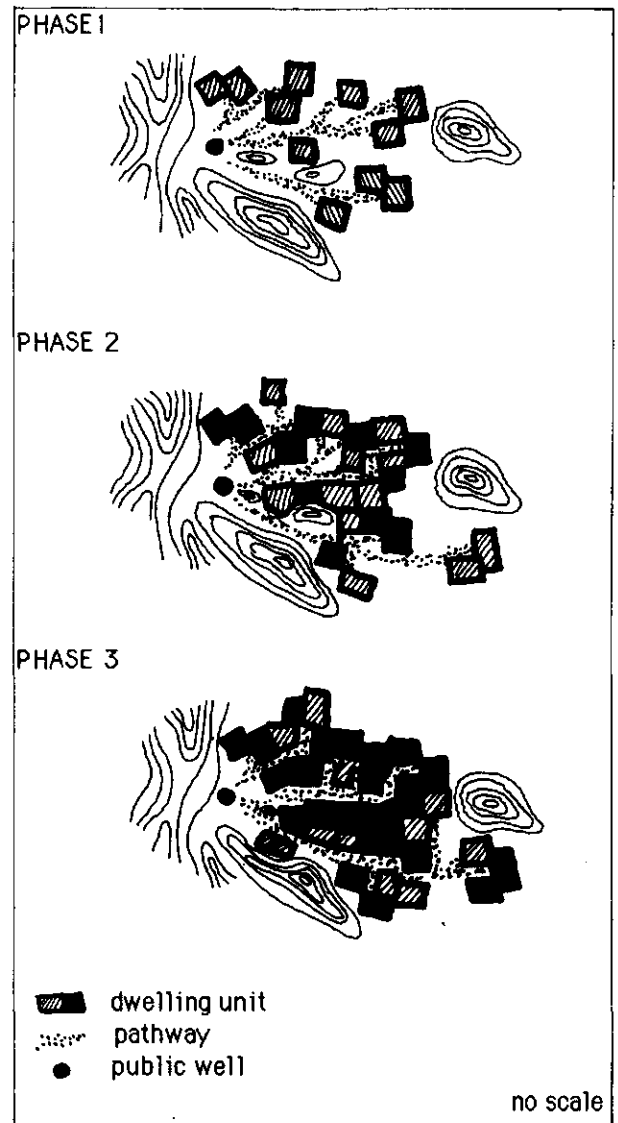


FIG. 2.4 Hypothetical illustration of the growth of traditional Muslim human settlements.

The figure shows the effects that pathways [right of way] to a public well will have on the layout of an human settlement in different phases of expansion. Each expansion phase forms the constraints for the next phase. The open space pattern is formed by the left over spaces from the buildings [Akbar, 1984].

municipality of Al- Khobar [waterfront park, upgrading main shopping street]. I also noted that in several large public housing projects like in Dammam, Khobar and Riyadh in Saudi Arabia, and Fayyum in Egypt [Veraart, 1988] involvement of users in the design process is missing.

intervention by authorities are that:

-Open space pattern and physical form of the Muslim environment are no longer mainly results of collectively made decisions by involved users and based on a synthesis of interests of these users [autonomous synthesis].

-Open space patterns and physical form of the Muslim environment are now becoming more and more based on decisions in which users interests are less involved or even absent. This is defined by Akbar as decision making based on heteronomous synthesis<sup>15</sup> [Akbar, 1984].

On the basis of limitation or absence of users involvement in decisions regarding design of open space it can be argued that the use of the word synthesis [combination of all elements and parts into a whole] in this context is not completely valid and can cause misunderstanding. It is a synthesis from one

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15] Heteronomous synthesis: The coexistence of properties in which the users have no control and do not own the property they are using. It is externally controlled, for example by the authority. The majority of properties in such an environment is in the permissive [see note 15-A] of dispersed form [see note 15-B] of submission. [Akbar, 1984]

15-A] Permissive form of submission: The state of a property in which it is shared by two parties, one owns and controls it while the second uses it. For example letting of property by the authority to the public. [Akbar, 1984]

15-B] Dispersed form of submission: The state of a property in which it is shared by three parties, one party owns, the second controls and the third party uses it. For example the authority owns or controls a property while inhabitants or the public uses it [Akbar, 1984]

point of view, only that of the external owner and controller of the space, such as, authorities. Still the expression "heteronomous synthesis" can be used as the counterpart of "autonomous synthesis", but with the knowledge that only a limited synthesis is meant.

The shift of responsibility from the users to the authority turned the built environment upside down and as a result also the open space use, pattern and physical form.

### **Users responsibility and contemporary open space**

An important effect of the shift of responsibility from the users to the public administration is that public spaces such as streets and squares, in traditional environments owned by all Muslims collectively and used and controlled by themselves, are now often owned and controlled by authorities<sup>16</sup>. Users do not have the opportunity to agree with layout or change in an existing situation. The user is forced to take it into possession as it is and to follow the rules dictated by authorities. In contemporary environments control and use generally belong to different parties. It can be expected that in this situation adjustments of

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16] Municipal authorities try to get more hold on developments of open space. This is an inevitable process as for example national and regional economic and infrastructural developments never come into being via, local user's decisions only. They are based on a hierarchy of functional interests. Uncontrolled developments, however, still occur in many settlements. For example in Fayyum, Egypt [Veraart, 1988] and in Aindar Village, Saudi Arabia [student study KFUPM, Al-Jamea, 1985].

example Surah XVI, Verse 80; Surah XXIV, Verses 27, 28, 30]<sup>18</sup>. Environmental implications of privacy can be understood by looking at the Islamic commandments referring to behaviour between male and females within and outside the [extended] family or kin group, resulting in a clear segregation into male and female spheres, one of the fundamental laws of Islam [Sura XXIV, Verses 30 and 31]<sup>19</sup>.

18] Surah XVI, Verse 80: "And Allah hath given you in your houses an abode, and hath given you [also], of the hides of cattle, houses [tents] which ye find light [to carry] on the day of migration and on the day of pitching camp; and of their wool and their fur and their hair, caparison and comfort a while" [Pickthall].

Surah XXIV, Verse 27: "Oh ye who believe! Enter not houses other than your own without first announcing your presence and invoking peace upon the folk thereof. That is better for you, that ye may be heedful [Pickthall].

Surah XXIV, Verse 28: "And if ye find no one therein, still enter not until permission hath been given. And if it be said unto you: Go away again, then go away, for it is purer for you. Allah knowest what ye do" [Pickthall].

Surah XXIV, Verse 30: "Tell the believing men to lower their gaze and be modest. That is purer for them. Lo! Allah is Aware of what they do" [Pickthall].

19] Surah XXIV, Verse 30: for translation see note 12.

"The rule of modesty applies to men and as well as women. A brazen stare by a man at a woman [or even at a man] is a breach of refined manners. Where sex is concerned, modesty is not only "good form": it is not only to guard the weaker sex, but also to guard the spiritual good of the stronger sex" [interpretation by Ali, 1934].

Surah XXIV, Verse 31: "And tell the believing women to lower their gaze and be modest, and

From these commandments design aspects regarding privacy can be derived, as they safeguard the individual independence, allow a person to decide how best to fulfil his own needs and allow him to use his resources beneficially. Essential in the approach to privacy is that privacy of others has to be respected, which seems mainly the result of the dependent role of women in Arab-Muslim societies<sup>20</sup>. To elaborate on the sense of privacy Sura XLIX, verses 4 and 5 ["The Private Apartments"] of the Koran<sup>21</sup> are

to display of their adornment only that which is apparent, and to draw their veils over their bosoms, and not to reveal their adornment save to their own husbands or fathers or husbands' fathers, or their sons or their husbands' sons, or their brothers or their brothers' sons or sisters' sons, or their women, or their slaves, or male attendants who lack vigour, or children who know naught of women's nakedness. And let them not stamp their feet so as to reveal what they hide of their adornment. And turn unto Allah together, O believers, in order that ye may succeed" [Pickthall].

"The need for modesty is the same in both men and women. But on account of the differentiation of the sexes in nature, temperaments, and social life, a greater amount of privacy is required for women than for man, especially in the matter of dress and the uncovering of the bosom" [partial interpretation by Ali, 1934].

20] Islam tends to insulate women from public and communal life thus protecting them from their own curiosity and that of others. This is achieved by building dwellings/houses [the domain of women] isolated from the outside world and veiling of women [Burckhart, 1976].

21] Surah XLIX, Verse 4: "Lo! those who call thee from the private apartments, most of them have no sense" [Pickthall].

"To shout aloud to your Leader from outside

taken as an entry, as the traditional city emanated from the dwelling [Akbar, 1984 and De Montequin, 1983].

The meaning of these verses can be paraphrased as follows: "The interior of your house is a sanctuary; those who violate it by calling you while you are in it do not keep the respect which they owe to the interpreter of heaven. They should be patient and wait until you leave the house, decency demands it; but God is All-forgiving, All-compassionate" [De Montequin, 1983]. Illustrative for the privacy concept is also the following saying of the Prophet narrated by Ahmad and al-Termedhi "If a man pushes aside a curtain and looks inside without permission, he has reached a point which he is not allowed to reach" [Al-Qardawi, 1969]. Both texts imply that a person's privacy is inviolable and is something that must be permitted to you by others, you have no right to it. As such these texts can be considered as the "Islamic lesson in privacy"<sup>22</sup>.

his Apartments shows disrespect both for his person, his time, and his engagements. Only ignorant fools would be guilty of such unseemly behaviour. It is more seemly for them to wait and bide their time until he is free to come out and attend to them" [partial interpretation by Ali, 1934].

Surah XLIX, Verse 5: "And if they had had patience till thou camest forth unto them, it had been better for them. And Allah is Forgiving, Merciful" [Pickthall].

22] The lesson that one's privacy should be respected by others seems intuitively understood. Before I had elaborated on privacy, students of King Faisal University in Dammam, Saudi Arabia often mentioned this point in their texts and discussions. Three examples:

*This lesson in privacy, related to an open space design context, implies that designs should provide to people the possibility to safeguard the privacy of others.*

The Islamic privacy concept is, however, not always interpreted in this way. In practise it seems mainly to be related to the separation in space. Llewellyn states, for example, that the strong Islamic privacy concept resulted in the building of residences which are hermetically closed to the exterior which in turn forced the concentration of domestic life in and around the private courtyard of the house. This makes it possible to enjoy the pleasures of life in the open air and in strict seclusion [Llewellyn, 1983]. Based on the interpretation as expressed in the "Islamic lesson of privacy" it seems that Llewellyn confuses privacy concept with, what might be better called, private space concept. The same confusion seems to occur in De Montequin's paper "The Essence of Urban Existence in the World of Islam" [1983]. De Montequin states that the Islamic privacy concept is expressed in the clear separation of a secluded private home existence from an exterior communal intercourse [private versus public]. The home life symbolizes the internal side of the Muslim existence [batin] and the public life

"If somebody has been forced to sit in a public space, roads for example, he has to control himself by being polite and not staring at women" [Al-Dhailan, 1987].

"You should respect the right of thoroughfares, avoid staring, do not create harm when sitting in it" [Al-Osaiba, 1987].

Khalid Al-Obaidan argues, in a class discussion, that privacy is primarily respecting another person by not looking [staring] at him or her.



symbolizes the external part [zahir]. As public space was considered unsafe for women, Muslims made an attempt to extend the safety of the kin group outside the dwelling unit by creating protected areas in which kin-like responsibilities and freedom could exist. Those areas generally formed transitions between private and public spaces and encompassed what would be indicated by contemporary city planning as clusters [Fadan, 1983], "super-blocks" or "residential islands" [Abu-Lughod, 1983] and were inhabited by individual groups with a strong solidarity among the members [Fadan, 1983]. Ties between groupmembers were based on kinship, descent, common origin or function. The character of transition areas between private and public spaces could be indicated as semi-private [Abu-Lughod, 1983].

The result of the internal and external part of the Muslim life is a fragmented urban life which together with the importance given to religion are essential factors which determine the specific character of the environment of the classical Islamic city [De Montequin, 1983]. De Montequin classifies the traditional Islamic city as "the 'private' and religious city of Islam" expressing the major role of the condition of privacy in the development of early Muslim cities. Also in his approach, privacy is interpreted as private space and subsequently used as counterpart of public space.

To investigate further the design interpretation of the privacy concept, the next paragraph provides a brief overview of

the manifestation of privacy concept in traditional open spaces, illustrated with examples taken from different parts of the region.

### **Privacy and traditional open space**

Arab-Muslim sense of privacy resulted in a layout of human settlements which are inwardly orientated, have an overall sense of secrecy and lack exterior display and frontal exposure of buildings and dwelling units [De Montequin, 1983]. Arab-Muslim dwellings generally had an outward form consisting of hidden entrance ways and residential courtyards, walls and screened outward-facing windows, which protected the domestic life of inhabitants against physical and visual intrusion by outsiders. These were conditions to protect the private family life against intrusion from the outside world and hindering the view of women, like "a veil". Form characteristics of open space expressing the sense of secrecy varied, however, due to specific natural physical circumstances and regional or local often pre-Islamic traditions, availability of building space and local building technology. Examples of these differences still exist in many of the old cities and city quarters which have survived until today. To illustrate some historical differences in regional or local form characteristics, examples taken from North and South Yemen, Egypt and Saudi Arabia are given. In North Yemen lower parts of buildings, usually made of local stone, have few openings while upper parts, mostly constructed of local made brick, have large

windows. Lower storeys were used for storage, shops, rooms for transacting business and safe keeping of animals [Lewcock, 1983]. Thus houses were capable of ensuring privacy of inhabitants. Houses were generally built in high densities expanding vertically to house all members of the [extended] family and are approximately three to nine storeys high [Evin, 1983] [figure 2.9]. They were generally square and with or without garden or courtyard [Adams, 1983]. Private family outdoor space was sometimes established by building a [covered] patio on the roof of the house. Examples of these can be found in the city of Hodeidah in South Yemen [Verdier, 1983].

Semi-public open space is provided by dead-end streets, which are mainly left over spaces between buildings via which access to houses is possible [figure 2.10]. Egypt's form characteristics expressing the privacy concept of open space strongly differ from North and South Yemen. Not only did regional and local traditions influence the design but so did Mediterranean [Greco-Roman] and Eastern [Mesopotamia and Iran] influences<sup>23</sup> put their mark upon it, resulting in the application of central courtyard houses, as for example in Fustat [Kubiak, 1987] [figure 2.11]. Sometimes blind walls were used to create private spaces for inhabitants as in Fustat. Walls here were constructed of bricks, made of local Nile clay [Kubiak, 1987]. Entrances to houses in old quarters in cities like Cairo and Fayyum are

<sup>23</sup> Mediterranean courtyards have some columnade like portico, prostos, etc. In the Eastern courtyards there is no columnade at all [remark Prof. Dogan Kuban, 1988].

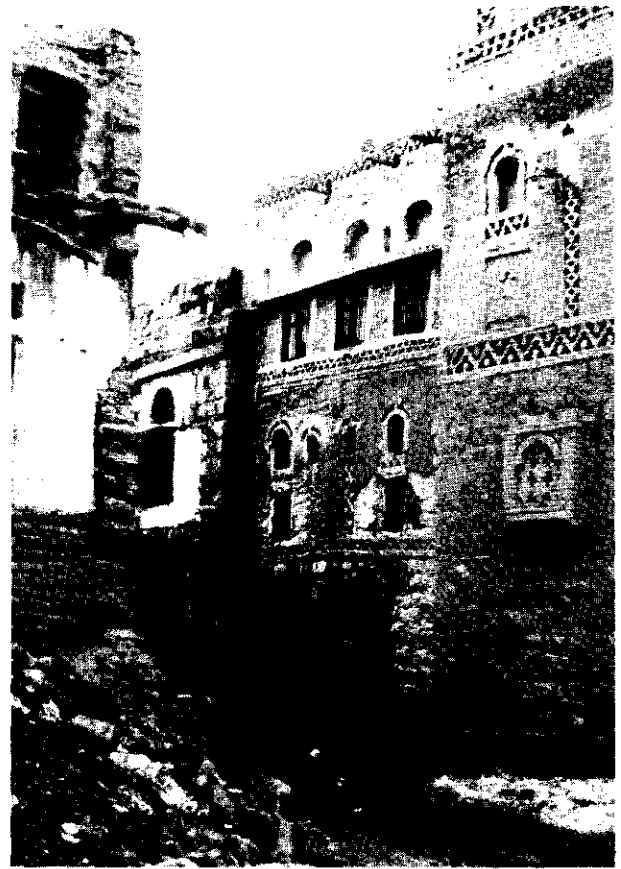


FIG. 2.9 Multi-storey buildings in Sanah, North Yemen. Doors are hidden to secure private entrance area for inhabitants [photo, Van Haeringen].

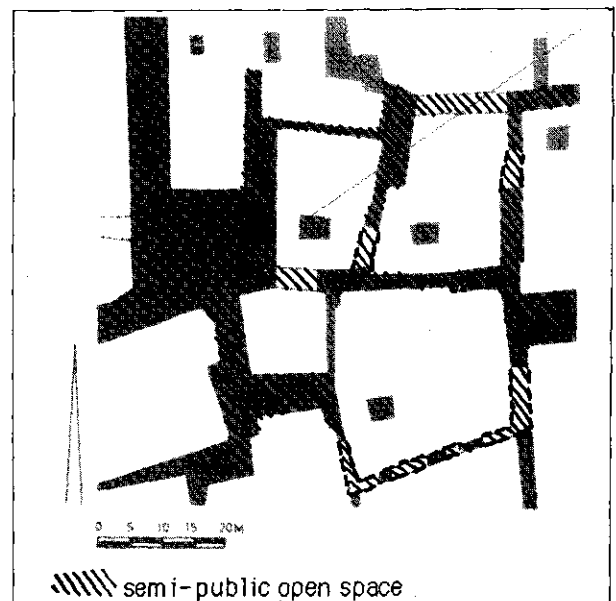


FIG. 2.10 Partial plan of Qatif indicating semi-public open spaces [Winterhalter, 1982].

partly hidden, emphasizing privacy of inhabitants, while dead-end streets form transitions between public and private open spaces [figure 2.12]. Sometimes screens were erected on roof terraces to block views from the street [figure 2.13]. The third example to illustrate the diversity in the spatial manifestation of the privacy concept is the old city of Jeddah in Saudi Arabia. Here, too, strong influences of foreign architectural traditions are evident. Turkish/Egyptian design characteristics like the *mushrabiyya*, interlaced wooden screen used wherever privacy should be visually emphasized without impeding the flow of air [Hoag,

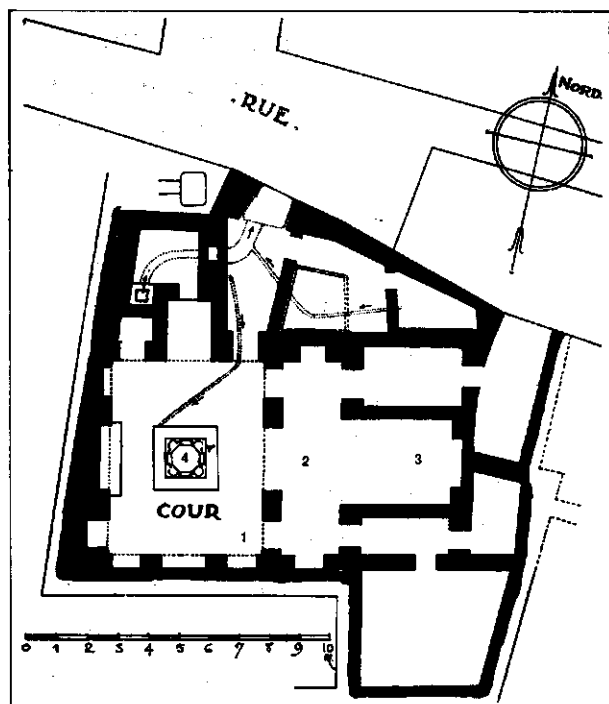


FIG. 2.11 Plan of courtyard house in Fustat, Egypt. [Grabar, 1984]. Courtyards secure a private outdoor family life. The central courtyards at Fustat are of Eastern [Persian] origin [remark Kuban, 1988]. Probably introduced into Egypt under the Tulunids between 868 and 905 [Beaumont a.o., 1976 and Hoag, 1977].



FIG. 2.12 Anderson house Cairo, Egypt [built in 1631]. Barred windows [mushrabiyyas] emphasize privacy of inhabitants. Dead-end street forms transition between private house and public thoroughfare.



FIG. 2.13 Anderson house, Cairo, Egypt [built in 1631]. Screens on roof terraces emphasize privacy of inhabitants.

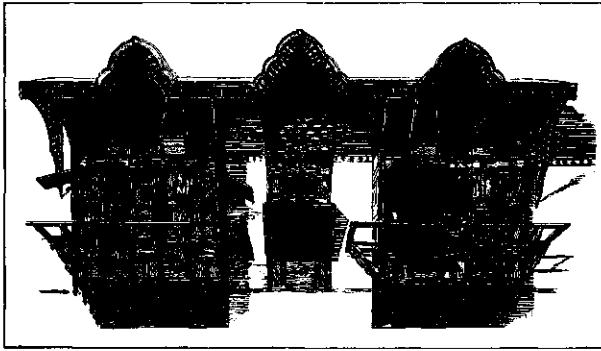


FIG. 2.14 Mushrabiyyas in Jeddah [Farsi, 1980].

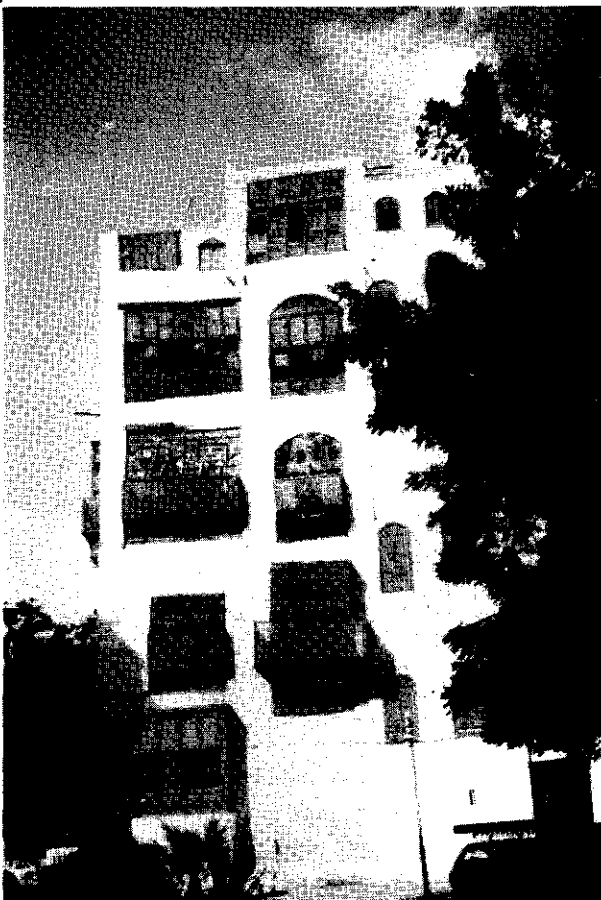


FIG. 2. 15 Old city of Jeddah, Saudi Arabia. Mushrabiyyas and very few windows in lower storeys emphasize privacy of the house.

1977][fig. 2.14], still determine the facades of main architectural and historical buildings [Farsi, 1980]. Lower storeys generally have no or few windows and less functions which require privacy. They may serve, for example, as storage spaces [figure 2. 15].

*In conclusion, it can be stated that the application of privacy concepts in design in reality may appear to be the application of private space concepts in which private spaces are given a form which strongly contrasts with public space.*

In order to avoid confusion, in the rest of this thesis the term 'private space concept' will be used instead of the term 'privacy concept'.

#### Privacy and contemporary open space

It would appear to the author from this research that designers of contemporary open spaces may be grouped in three categories on the basis of the application of private space concepts. A first group, strongly inspired by the traditional private space concept, appears to give attention to privacy in relation to the overall settlement pattern. Open spaces are divided in parts regarding private and public use linked to each other by applying a basic pattern of connection, transition and culmination [Germeraad, 1986]. The design of residential commercial complexes in Abu Dhabi by URPAC [Urban and Regional Planning and Architectural Consultants b.v.] is illustrative of the proposed basic pattern of many contemporary open space designs [figure 2.16]. URPAC suggested that in the transition between private [single dwelling unit or cell] and public open space [open

square] two semi-private areas and not one should be considered. URPAC divided the transition area into semi-private and semi-public while stating that this partition together with the layout of the house [figure 2.17] form conditions to create meaningful open space in terms of privacy needs of users. [URPAC, 1982].

The second group of designers seems to limit themselves mainly to private space concepts only on the scale of a cluster and dwelling unit, for example in Jubail [Jubail Industrial city, Architectural Design: Housing, 1978] and Yanbu [Deering, 1985]. Semi-private open areas in cluster concepts are often common open spaces in a group of dwelling units. Main elements of these open areas are an interior circulation road, playground or parking place [figure 2.18]. Allowing cars into semi-private open spaces, however, makes securing the semi-private character by social control more difficult. Strangers in cars can too easily enter these open spaces.

A third group of designers seems not to pay any attention at all to the private space concept in relation to urban open space patterns; this possibly may be due to a design process based on a top-down approach. In their designs, functional [eg., infrastructure], climatical, and visual [eg., form of skyline and prestigious character of buildings] considerations usually prevail [Bianca, 1988]. Examples of this design approach are found in plans for Riyadh [SCET Internationales/Sedes, 1982] and Al-Khobar

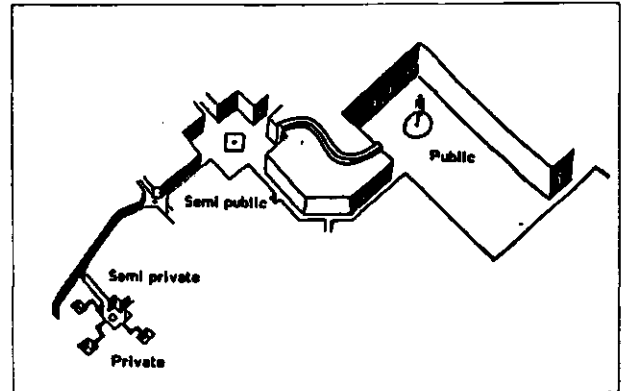


FIG. 2.16 Sequence of open spaces in Arab-Muslim cities. Proposed open space model for community and house grouping in Madinat Zayed, Abu Dhabi [URPAC, 1982].

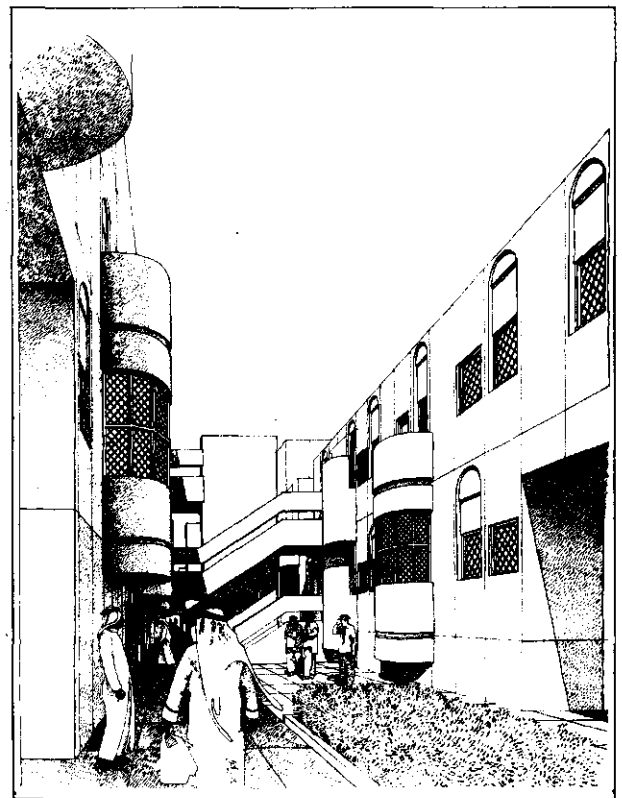


FIG. 2.17 Elaboration of A semi-private area in a proposed community and house grouping in Madinat Zayed. To achieve optimum privacy and protection from the outside on the first floor of buildings services and reception areas are proposed. Direct openings to the exterior are minimized and mushrabiyyas are proposed to block views from the outside [URPAC, 1982].

[CH2M Hill International and Consulting Engineering Group, 1980] both in Saudi Arabia. In all these plans privacy considerations, with exception of noise, are not indicated as urban open space design guidelines. Filling in the private space concept in these cases seems to be the responsibility of architects dealing with the dwelling units.

It seems that generally four main design solutions can be applied when looking at the private space concept for open spaces which form a part of contemporary dwelling

units/houses:

- 1) Courtyard houses in which the private open space is situated in the centre of the house [figure 2.19].
- 2) Single or linked one-family houses and villas completely or partly surrounded by private walled open space or spaces [figure 2.20].
- 3) Multi-storey houses with private balconies and/or roof terraces [figure 2.21].
- 4) Combinations of 1, 2 and 3.

During the last decades a strong increase in building of single and linked one-family

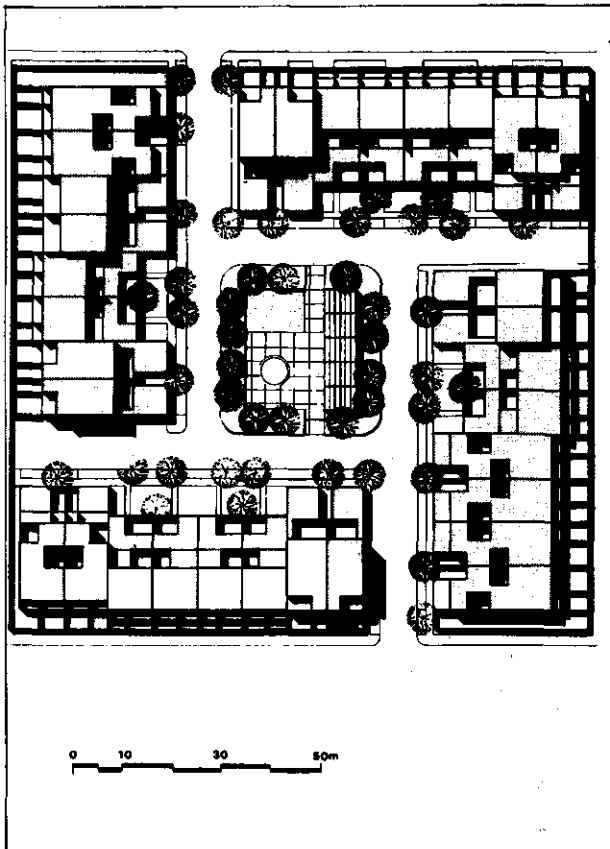


FIG. 2.18 Conceptual design of a cluster of dwelling units in Jubail, Saudi Arabia [Jubail Industrial city, Architectural Design: Housing, 1978].

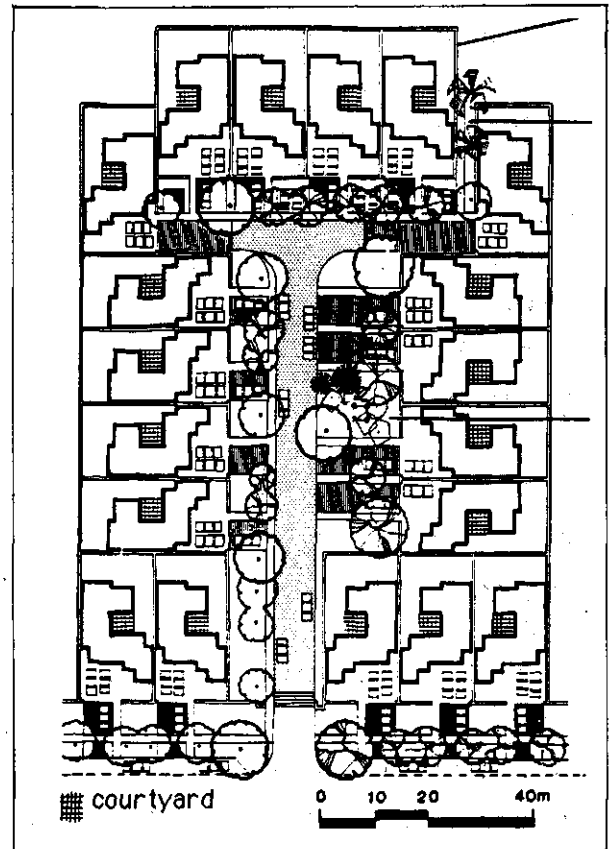


FIG. 2.19 Scheme of courtyard houses with central located private courtyard, proposed for Subiya New Town, Kuwait [Dar Al-Handasah Consultants and Kuwaiti Engineering Group, 1985].

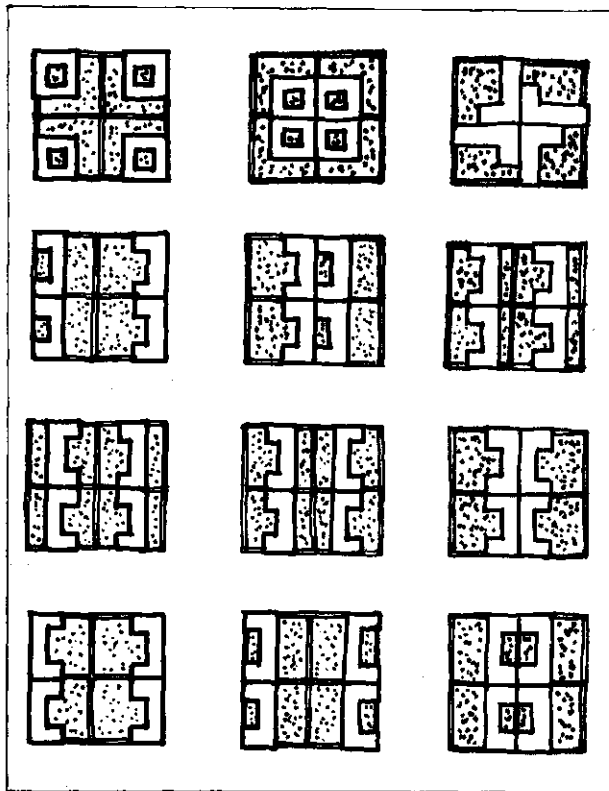


FIG. 2.20 Single or linked one family houses in different configurations illustrating locations of private open space [Deering, 1985].

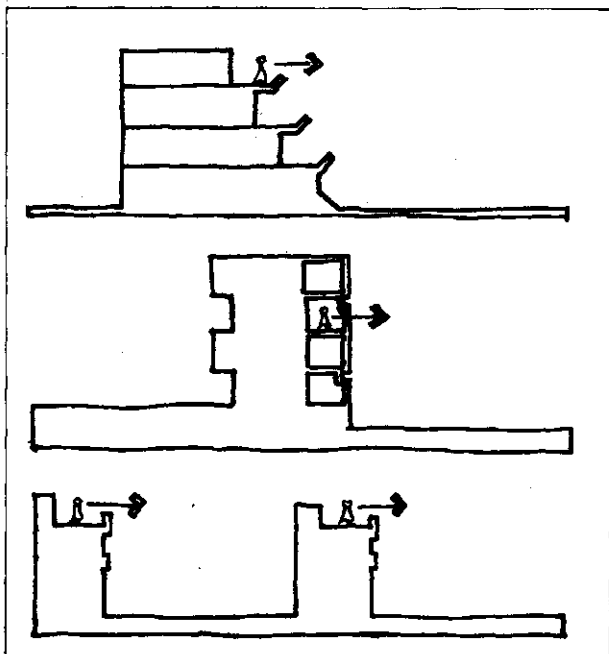


FIG. 2.21 Examples of the application of balconies and roof terraces in and on multi-storey houses to create private spaces for users [Deering, 1985].

houses and villas together with multi-storey houses has occurred. In the design of these houses the traditional inwardly oriented private open space seems to be replaced by a more outwardly oriented one [figure 2.22].

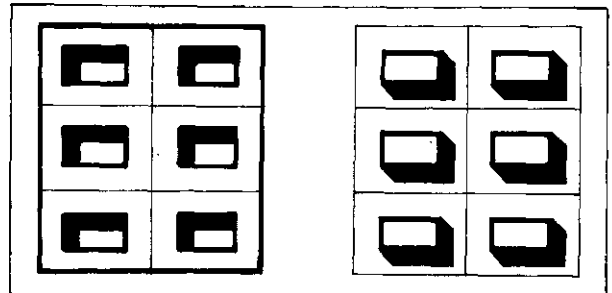


FIG. 2.22 Schemes of inwardly and outwardly oriented private open space. The outwardly oriented open space is separated from the public environment by walls and/or screens.

Site surveys done by the author in Saudi Arabia and Egypt in 1987 and 1988 prove, however, that contemporary design solutions do not always create spaces fostering respect for other people's privacy. Frequently physical adaptations, as for example screens on balconies and around gardens, are made by dwellers to create private spaces in their houses and garden [figure 2.23, 2.24 and 2.25]

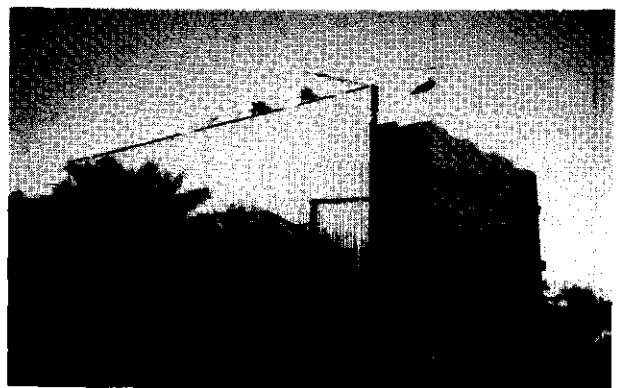


FIG. 2.23 Additional screen on top of garden wall to block views from multi-storey building to courtyard house. Khobar, Saudi Arabia.



FIG. 2.24 Screen added to balcony to block views from the street. Khobar, Saudi Arabia.

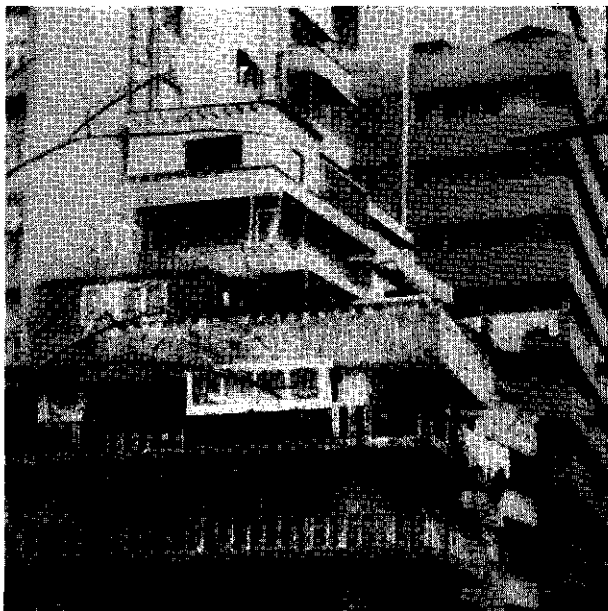


FIG. 2.25 Wooden walls built around terrace to block views from outside and to extend dwelling unit. Cairo, Egypt [photo: Zuidema].

In order to understand the organization, use and appearance of urban environments, it is also necessary to review the economic and political circumstances which form part of the conditions responsible for the emergence of urban open space. Paragraphs 2.1.2 and 2.1.3 give a brief overview of economic and political factors and their influence on the development of human settlements.

### 3 Waqf<sup>24</sup>

The institution of waqf is a form of charitable endowment, similar to the modern concept of trust [ Egypt, Min. of Housing and Reconstruction etc., 1977]. It entitles any kind of private property -buildings, land or wells [trusts]- to be constituted as inalienable public estate, either by assigning them directly to the use of the public as in the case of a mosque or hospital or by reserving their revenues for the upkeep of a sanctuary, college or other institution of social utility [Burckhardt, 1976]<sup>25</sup>. The origin of the institution might go back to the advice given by the Prophet Mohammed to Umar when he wished to give up one of his lands for charity purposes<sup>26</sup>. As the concept of waqf

24] Some synonyms: awqaf, habus -in North Africa-[Burckhardt, 1976], Wakf [Dames and Moore, 1981].

25] "The revenues from the trust provide first for the charitable purposes for which it was established; then the balance is distributed among beneficiaries and the administrator of the waqf" [Serageldin a.o., 1979].

26] The Prophet said to Umar: "Give those



developed, two types of Waqfs emerged: 'waqf khairi' and 'waqf ahli' [known as 'waqf adi' outside Egypt]. The first plays a major role in financing community buildings, the second one is assigned to a number of specified persons, generally relatives and descendants of the benefactor<sup>27</sup> [Egypt, Min. of Housing and Reconstruction/Min. of Planning, 1977]. The waqf system has played an important role in the financing of social oriented public buildings like mosques, schools, hospitals, fountains, caravanserais, bath-houses [Burckhardt, 1976] meant to maintain the social infrastructure in urban areas. Furthermore it is a direct expression of the community spirit of Islam in which charity is an essential factor<sup>28</sup>. In the nineteenth and twentieth century governments gradually took over the waqf institutions by installing special ministries [for example in Egypt] or departments [for example in Saudi Arabia], but until today waqf authorities have a certain autonomy within the states of the Middle East<sup>29</sup>. Funds are generally not

trees as a whole in charity [as waqf] so that those might not be sold but their fruits can be spent and given in charity" [Al-Bukhari, Sunnah XXXIX, 14 chapter; translation by Khan].

27] When all persons who have a claim on the waqf have died the income will go to a community institution named by the founder of the waqf [Egypt, Min. of Housing and Reconstruction/Min. of Planning, 1977]

28] Charity belongs to the third Pillar of Islam. It states that one has to pay religious tax [zakat], which is paid to the community [Peppelenbosch and Teune, 1981].

transferred to public treasuries in support of public service functions implemented by these states [Serageldin a.o., 1979].

The existence of waqf institutions limited the renewal and development of urban areas especially in cities established before the nineteenth century [Cairo, Egypt; Baghdad, Iraq and Sanah, Yemen]. For example waqf ahli lands could not be mortgaged because profits after maintenance and administrative expenses had to be distributed among the beneficiaries instead of being reinvested in the property [Egypt, Min. of Housing and Reconstruction/Min. of Planning]. The effect of waqf institutions on design is often fourfold. Firstly the areas can only be used for public utility projects [Serageldin a.o., 1979] [figure 2.26]. Secondly waqf creates open spaces such as common vegetable gardens and orchards in North Yemen [Evin, 1983] [figure 2.27]. Thirdly it often results in relative open areas with remains of buildings due to neglect of the built structures [Burckhardt, 1976]. Fourthly waqf makes a contribution to the historical continuity of settlements since original buildings, often of historical significance, can, and historically could not be, removed from a waqf [Burckhardt, 1976 and Serageldin a.o., 1979]. The expectation is, however, that the process of the abolition of waqf institutions, which only recently started, will slowly reduce urban design

29] The administration of waqf institutions came under separate ministries [like Jordan, Egypt and Iraq], or special departments [like Syria and Saudi Arabia] [Serageldin a.o., 1979].



FIG. 2.26 Fayyum, Egypt. Waqf in the middle of an intersection, used as park [photo Veraart, 1987].



FIG. 2.27 Sanah, North Yemen. Waqf used as common vegetable garden [information, Van Haeringen, 1985].

limitations in future<sup>30</sup>.

Next to traditions, economy and politics can be considered as important factors affecting the development of settlements. In the next section brief overviews of the most important economic and political activities and their historical contexts are given<sup>31</sup> in order to

30] Waqf ahli institutions were abolished in Egypt in 1952, which led to great increase in the rate of land development in Cairo and other Egyptian cities [Egypt, Min. of Housing and Reconstruction/Min. of Planning].

31] Wagstaff's book 'The Evolution of Middle Eastern Landscapes' [1985], formed the main

understand the influences of economic and political factors on the societies of Arab-Muslim countries in the Middle East, and subsequently on the urban patterns of their cities.

### 2.1.2 ECONOMIC FACTORS

The Muslim Middle East during the Middle Ages was a series of urban islands linked by trade. Trade was stimulated by:

- The unification of much of the region in one state.
- The circulation of relatively large quantities of precious metal.
- The improvement of credit facilities.
- The existence of a commercial mail service.
- The construction of caravanserais and bridges on the major routes [Wagstaff, 1985].

Political fragmentation after the middle of the tenth century decreased trade and assisted an overall decline in production. In general, trade was widespread both in the region and abroad [France, Italy, Central Asia, the Mongol Empire, India]. The wealth of the Arabian elite and the survival of towns was based on agriculture, which showed an enormous growth until the eighth century. After this century decay set in due to neglect, natural disaster, the breaking down of central authorities and warfare. Urban populations declined and town economies faltered while rapacious taxations reinforced the downward spiral in population and output. The downward movement continued until the end

source for both the economic and political overviews.

of the fifteenth century. In the sixteenth century the Ottoman civilization came to maturity and the power of the Ottoman empire spread over almost the whole Arab-Muslim Middle East. Urban populations grew during much of the sixteenth century due to:

- Drift from the land, caused by over-population of the land.
- Forced immigration to cities by the Ottoman authorities.
- 'Pull' of towns themselves [job opportunities, lower tax in cities].

Old towns were revived and new towns were built to create the necessary centres for the officials of the empire who supervised the organisation of the 'command' economy and implemented the Sultan's administrative and fiscal decrees. The cities functioned also as bulk good storage centers where food and raw materials could be gathered to ensure the tranquility of the capital and major provincial cities, particularly in times of shortage, and to maintain its regular troops. All this implies an hierarchical urban structure, dominated by Istanbul. 'Turkisation' gradually gave an Islamic character to towns. Ottoman rule was stamped on the larger cities by palace architects, through the construction of mosques and 'imarets' [a combination of mosque, madrasa - school -, hospital and caravanserai] in a distinctive style. Local trade flourished; the provision of major cities and the armed forces created extensive flows of food and raw materials across the empire. The Empire was also a major force in world trade. Trade took place with: Western Europe, India, East

Indies, Sudan, East Africa, Poland and Russia. Ottoman expansion brought control of the region's land and sea transit routes.

The historiography of the Ottoman Empire in the seventeenth and eighteenth centuries was dominated by decline and decay. In the seventeenth century the Ottoman Empire began to lose territory on the Persian frontiers and in Europe. Egypt was lost in the eighteenth century due to the invasion of Bonaparte [1798] [Wagstaff, 1985].

Towns continued to flourish in the seventeenth and eighteenth centuries [Aleppo, Damascus, Cairo, Smyrna, Acre] due to:

- 1) Considerable immigration, caused by:
  - Certainty of food supplies.
  - Accessibility of charity.
  - Work opportunities.
- 2) Trading systems which continued to centre on the region's towns.

Inter-regional trade reflected both continued governmental concern for the provisioning of the major cities<sup>32</sup>, including Mecca and Medina [Wagstaff, 1985]. Nineteenth century European merchants continued the interest of their predecessors in purchasing raw materials and foodstuffs of the Middle East. Exports of the Middle East [raw silk, cotton, cereals, tobacco] increased during this century due to:

- Industrialisation of North-western Europe and the U.S.A.

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<sup>32</sup> For example, dates, Indian goods and spices were transported from the Arabian Gulf to Aleppo [Syria]. Tobacco, silk and dried apricots were traded from Aleppo to Egypt. Textiles were brought from Damiette [Egypt] to Cairo [Egypt] Wagstaff, 1985].

- Political crises [Napoleonic Wars 1793-1815; Crimean War 1853-1856].
- Shortages ['Cotton Famine' due to the American Civil War] [Wagstaff, 1985].

The region became part of the integrated world-wide economic system and its export responded to external demands. Increased shipping due to the increase of trade demanded improvements of the major ports, transforming waterfronts. Railway systems were developed and subsequently roads were constructed. However, in many cases imperial and strategic considerations were important. Further expansion of the road system was seen in the 1950s and the years thereafter. Governments sought to promote national integration and economic development by often ambitious road building programmes. In general the nineteenth century shows a growth of the urban population due to natural growth and immigration. The natural population growth in towns was higher than in the countryside, especially in a few large centres such as the port-cities. Most of the new towns grew from established communities [eg. Cairo and Damascus] [Wagstaff, 1985], but a few were complete new foundations such as Ismailiyah, suburb of Cairo [Abu-Lughod, 1971]. The direction of growth was often dictated by roads approaching towns and location of railway stations. Roads and railways acted as development axes for both legal and illegal [hovels] building activities, which led to development of linear open spaces parallel to roads and railways, a process which continues even today [figure 2.28].

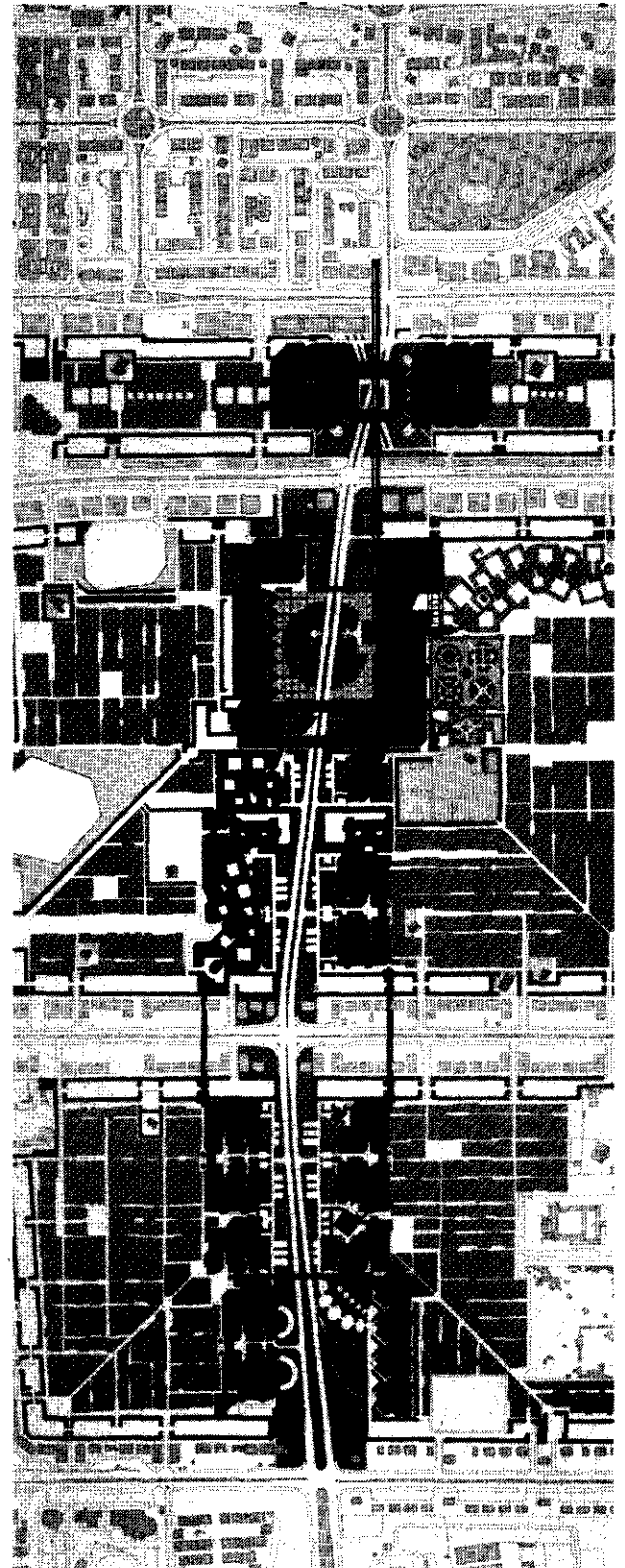


FIG. 2.28 Proposed plan for Madinat Zayed, Abu Dhabi, showing linear open spaces along city highway, mainly designed as recreational areas [URPAC, 1982].



FIG. 2.29 Wide street in nineteenth century residential area in Cairo [Egypt] giving access to wheeled vehicles.



FIG. 2.30 Railway station in Fayyum [Egypt] built during the nineteenth century in European [English] style [photo Veraart, 1987].

In general new towns and new suburbs developed in the nineteenth century and the beginning of the twentieth century were characterised by:

- Wide, straight streets giving access to wheeled vehicles [figure 2.29].
- Streets intersecting at right angles or radiating from public gardens.
- A [public] architecture and city design of an European style imported from countries as France, Germany or England, dominating the townscape [figure 2.30].

In general characteristics of the old towns during that period were:

- The old core was a minor part within the urban area.
- Old fortifications were neglected.
- Large old houses were subdivided and left to decay.
- Wide avenues were cut through the old quarters.
- Old bazaars still existed but the distribution of activities within them frequently changed over time [Wagstaff, 1985].

As in the early centuries urban functions remained mostly as centers for administration, distribution of foreign goods and centers for collecting and forwarding agricultural products. Due to the increase of these centers in the nineteenth century, hinterlands [outlying areas] grew and became more integrated as commercial agriculture spread and transport improved.

During the nineteenth century Middle Eastern industry began to change. Industry was, in spite of import substitutions, negatively

affected by foreign imports. The real boom of the Middle Eastern industry came in the twentieth century due to:

- Revival of experiments in import substitution.
- Attempts to establish basic industries [iron, steel].
- Revenues from the exploitation of oil and natural gas, as well as from the later use of these directly as fuel.

As the Middle East's contribution to world oil supplies increased, the way was prepared for a reassertion of the importance of the Gulf as one of the world's commercial arteries. [Wagstaff, J.M.; 1985]

Societies in the Muslim countries in the Middle East have changed over time due to economic upheaval. The changes, especially in the last decades, occurred generally due to the increase of petro- dollars together with often growing direct and indirect influences of Western cultures [Westernization]. The physical effects of these changes are visible in the layout of human settlements. Western technology and Western planning approaches have in many cases strongly affected the appearance of urban open spaces. Western building technology and aesthetics, in which often local building and design traditions are ignored, are determining the appearance and shape of buildings and in this way the boundaries of the open spaces. Planning principles in which attention is given to local physical factors are often not used. Western planning approaches such as a strong zoning of activities are often applied and many times result in a loss of basic neighborhood

facilities [shops and work/repair shops] [Aga Khan Award for Architecture, seminar proceedings 1978, 1979, 1980, 1981, 1983, 1984 and 1986]. In paragraph 2.2.2 'modern design concepts' Western influences and their specific effects on design of open spaces will be further elaborated.

### 2.1.3 POLITICAL FACTORS

In this paragraph attention is given to the main historical aspects of the urbanization in the region. These aspects will help the reader to understand the development circumstances of urban design concepts [traditional and modern] which are manifest in many contemporary settlements<sup>33</sup>.

Military successes in the seventh century created an empire which was ruled at first [632-656] by Caliphs chosen from the Prophet's own tribe and generally acknowledged by all Muslims in the conquered areas. The proclamation [656] of Ali, the Prophet's first cousin and son in law, brought division. It introduced not only armed conflict in the short run, but created also a permanent cleavage in the house of Islam between Shia<sup>34</sup> and Sunni<sup>35</sup>.

<sup>33</sup>] This text is not intended to give a complete historical and chronological overview; for this I would like to refer the reader to the many publications on this subject.

<sup>34</sup>] Shia, derived from Shiat Ali ["The Party of Ali"], are people who believe that the true line of Muslim authority [via imams] runs through Ali [The Prophet's first cousin and son-in-law] and his two sons, Hasan and Husain [Waardenburg, 1987 and Wagstaff,

The Umayyads [661-750] consolidated the Muslim Empire and continued its further expansion, incorporating north-eastern Iran, where many Arabs subsequently settled [figure 2.31, see page 42]. From then on the political history of the Middle East has been a kaleidoscope of locally based principalities, expanding and contracting over more or less short periods of time, a process complicated by intrusions from outside the region. The results of this political fragmentation and the allied warfares and changes of political regimes produced significant changes in the region's towns [Wagstaff, 1985]. Sometimes continuous tribal warfare affected layout of cities and building design. For example in Yemen the siting of towns and their urban pattern reveal a predominance of defence considerations. Firstly, settlements were built on mountain and hill tops while agricultural lands were often developed within fortified urban areas in order to provide inhabitants with food when the settlement was under siege. Secondly, closed lower parts of buildings provided fortress-like defence [Al-Attar, 1983].

The Islam increased the degree of urbanisation in the Middle East in using a distinctive form of town. The town was an important feature in the Islamic world. 1985].

35] Sunni are people who follow the examples [Sunnahs] given by the Prophet, and the agreement within the community [Djama'a] regarding essential matters of the Law and religious doctrines [Waardenburg, 1987]. The line of religious authorities is based on election [De Bruijn, 1987].

Friday mosques [Jami's<sup>36</sup>] were erected for public prayer at midday on Friday, which was meant to unite the Muslim community. Furthermore religious scholars and lawyers who interpreted and sustained the faith could only function in towns [nodes in local communication and information systems] [Wagstaff, 1985].

In general people migrated to existing towns; only a few new towns were established in the Middle East after the Arab conquest with exception of various military camps and palace towns. In general those cities existed for only a short while due to shifting political power, the building of new royal residences, the destruction during wartime, etc. Famous examples which survived are:

- Baghdad and Samarra [Iraq], which both had an important politico-economic and religious function.
- Cairo [Egypt], which had a political importance as it was situated on an intersection of inland connections [Wagstaff, 1985].

Islamic and cultural values generated a specific form of town; the focus was the Friday mosque as seen in figure 2.32. From 700 onwards, mosques began to dominate the townscapes of the region. Architectural styles varied from area to area according to local building traditions, but the basic form remained that of an open space with arcades

36] Jami's served as community centers for people living within the settlement where it was located and for people dispersed in the surrounding region [Lapidus, 1969].

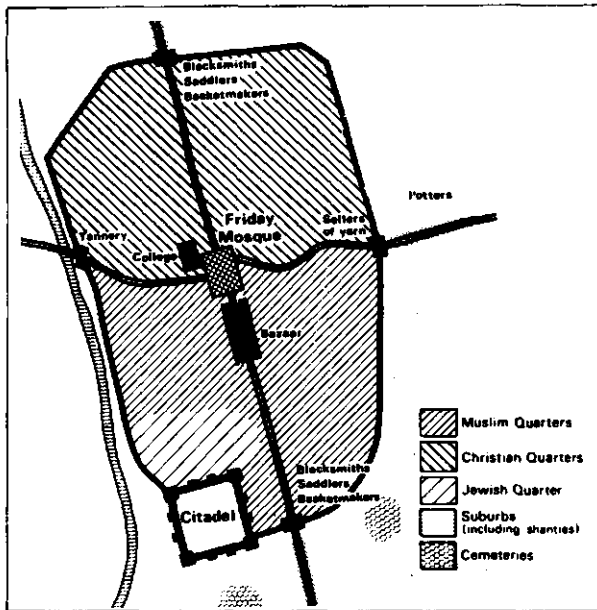


FIG. 2.32 Model of Islamic town [Wagstaff, 1985].

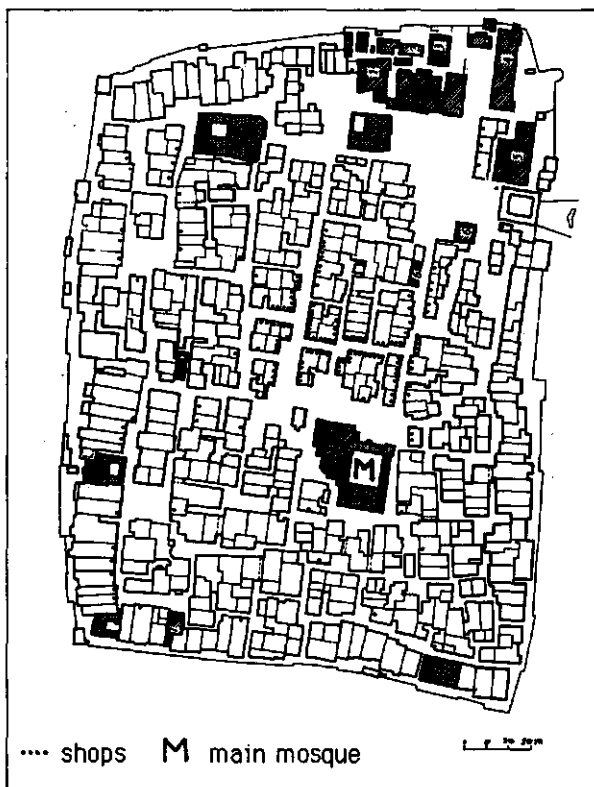


FIG. 2.33 Contemporary site plan of the city of Shibān [South Yemen], showing shops near the main mosque [Breton, 1985].

for prayer. Minarets became the distinctive symbols of Muslim dominance. The principal commercial area, consisting of shops, workshops and warehouses, was near the mosque, a layout which often survived until today [figure 2.33]. Separation of trades was, however, never complete. Bakers and grocers tended to be found in residential areas and noxious trades [like tanning] were forced to the periphery of the built-up area. Public baths were, in general, more centrally located because of the importance of ritual ablution. The citadel was the centre of political and administrative power, its walls accentuating the division between the mass of the population and the often alien governors and soldiers. Streets were narrow and meandering; cul-de-sacs were common. Residential quarters were distinguished on the basis of community affiliation, particularly religious allegiance.

As Muslim society matured, further distinctive elements were added to the towns. Larger cities had often more than one Friday mosque, despite the formal limitation to one, due to the evolution of communal organization<sup>37</sup> of the Muslim society and in order to display the glory of the rulers [eleven and twelfth century] [Lapidus, 1969]. Small mosques were built in the quarters of most towns [twelfth century]. Religious schools and colleges appeared from

<sup>37</sup> Due to this evolution the Jami was less directly attached to the state and became more attached to local religious communities such as different law schools and sects. For each of these groups specific Jamis could be founded [Lapidus, 1969].



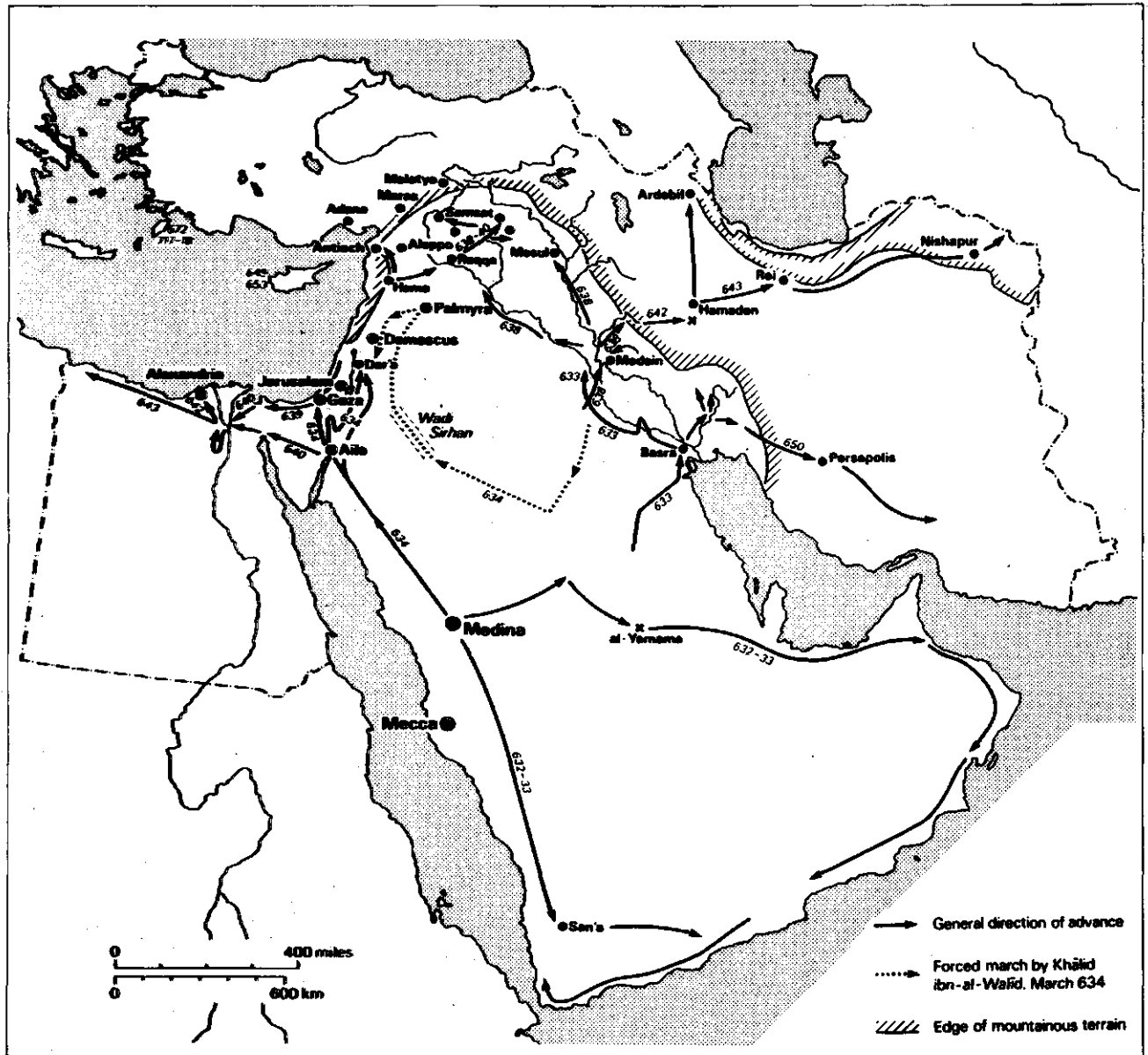


FIG. 2.31 Early Arab Muslim expansion, c.632-660 [Wagstaff, 1985].

the eleventh century onwards. Rectilinearity in layout of streets and buildings was an important feature of palace or political towns such as Samarra [Iraq]. The palace was often built on a maydan [square] reached by a ceremonial approach and in some cases lay near pleasure gardens [Wagstaff, 1985]. Most towns seem to have flourished to

perhaps the tenth century. After this century physical decay occurred widespread due to warfare, local tyranny, the neglect of communications and water supplies, epidemics [pestilence], the weakening of the agricultural base, invaders such as Turks and Crusaders [eleventh century], Mongols [thirteenth century]. The invasions of the

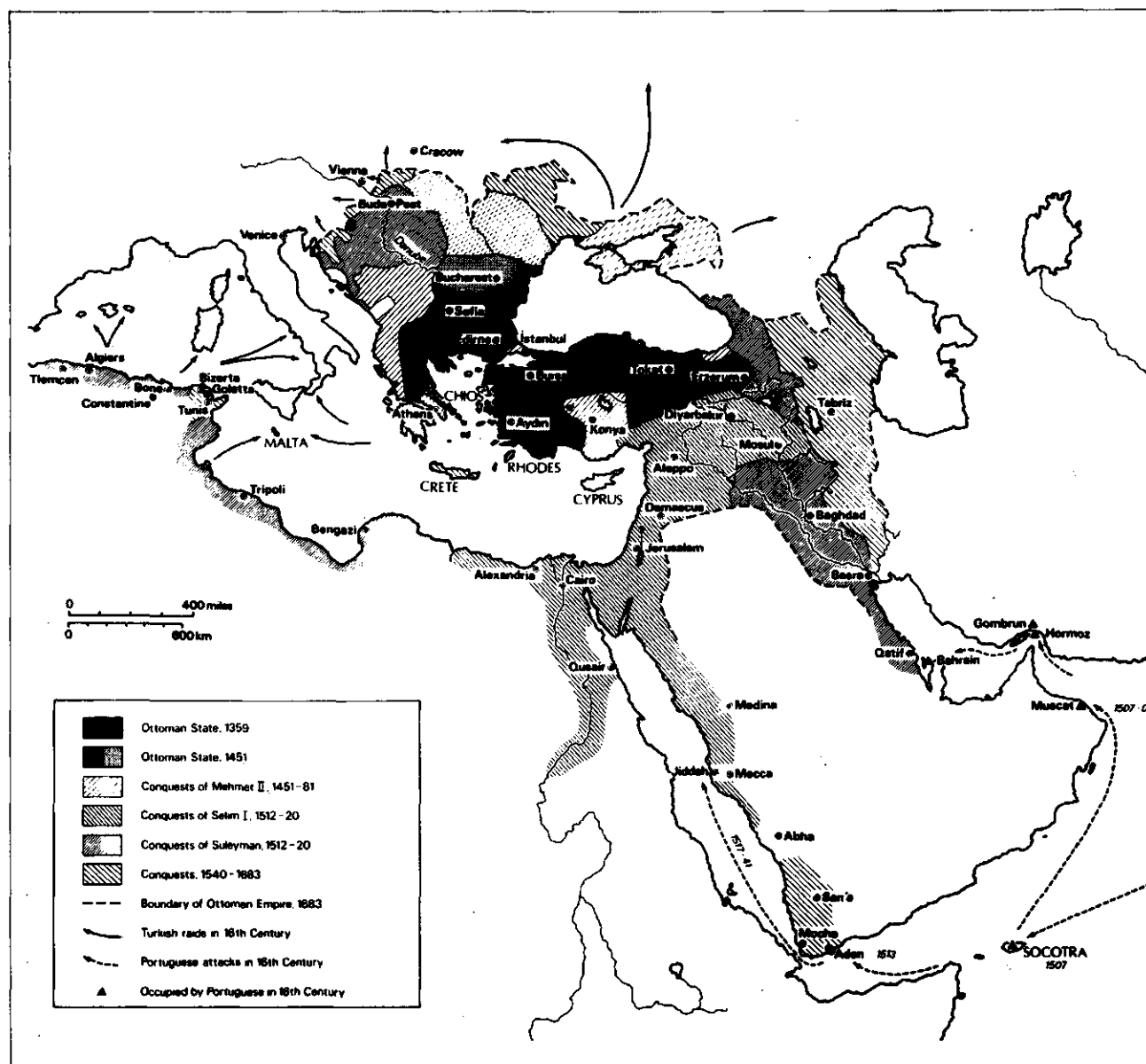


FIG. 2.34 Growth of Ottoman Empire, 1359-1683 [Wagstaff, 1985].

Turks often had, however, a positive effect on the region as the ongoing process of decay changed with the rise of the Ottoman Empire in the fourteenth century. Turkish military successes brought political control and with it the introduction of administrative and

social institutions learnt in other Muslim countries. The Turks were at first under the loose control of the Selcuk sultans. The break up of their empire due to invasions by Mongols led to the institution of a number of emirates: one of them the creation of Osman Gazi [1258-1324]. This period was the

provided a solution for the problem of protection from the sun because they facilitate minimal solar exposure of buildings and open spaces between buildings [Verdier, 1983] [figure 2.36]. Secondly, natural physical factors influence the construction of arcades, pergolas and kiosks, and landscaping. Constructions and also landscaping contribute significantly to the liveability of open spaces by ameliorating the micro climate. Plants reduce for example wind speeds and temperatures, and catch dust from the atmosphere<sup>40</sup> [Alsayyad, 1984]. For designs of open spaces an understanding of limitations and use of potentials of natural physical conditions of the area is therefore essential. The most important limiting conditions to be considered in open space design are summarized as follows: The Arab-Muslim area of the Middle East is part of the arid and extremely arid zones which reach from Africa to Central Asia [figure 2.37]. These zones represent special climatic, soil and hydrological [properties, distribution and circulation of water] limitations from an urban open space design point of view. In practice there exists a strong relationship between geomorphology [the configuration and evolution of landforms] and the characteristics of the natural physical factors indicated above. Geomorphology will therefore not be reviewed separately but as an integrated part of climate, soil and hydrology. Main general limiting conditions which might occur are described below.

<sup>40</sup> One hectare of dense forest can catch approximately 55 tons of dust [Alsayyad, 1984].

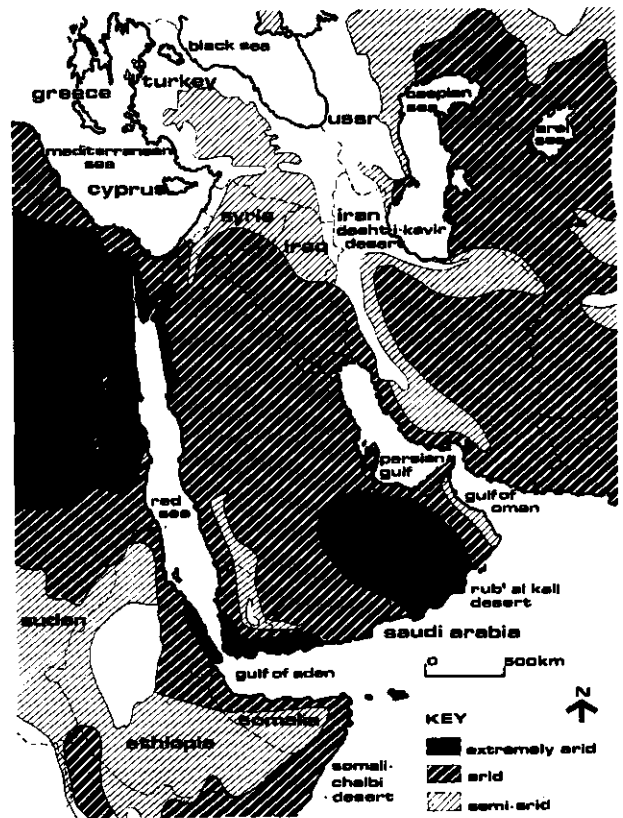


FIG. 2.37 Climate zones in the Arab-Muslim area of the Middle East [Adams, 1978].

### Climatic conditions

Important climatic factors to be considered are wind, rain and heat/temperature.

Winds frequently reach high velocities and can develop [damaging] sandstorms and duststorms, which can have the following effects:

- High evapo-transpiration [plants] and evaporation [soil] rates, particularly in areas with low humidity and high temperatures.
- Sand abrasion, due to sand blow.
- Defoliation.
- Burial of built and non-built elements, due to sand accumulation.
- Salt spray in areas near the sea damaging

plants and built structures vulnerable to corrosion.

Rainfall, if it does occur, often causes the following problems:

- Infiltrating rains may wash accumulations of salts into the sub-soil affecting plants and foundations.

- Heavy rain, falling as intensive short-lived showers, causes extensive surface erosion, for example in wadis and on steep slopes, due to the inability of the soil to absorb the water in a short time.

The most important requirement for living organisms is moisture. Amount and duration of precipitation is critical. Beaumont's simplified bioclimatic map [figure 2.38] is shown below to illustrate the duration of rainfall in the Middle East [Beaumont a.o.1976]. This map indicates the number of dry days during the dry period, derived from precipitation and relative humidity data. Almost all parts of the region are characterized by long dry periods. These periods are generally extremely hot with the sun shining continuously in a cloud-free sky.

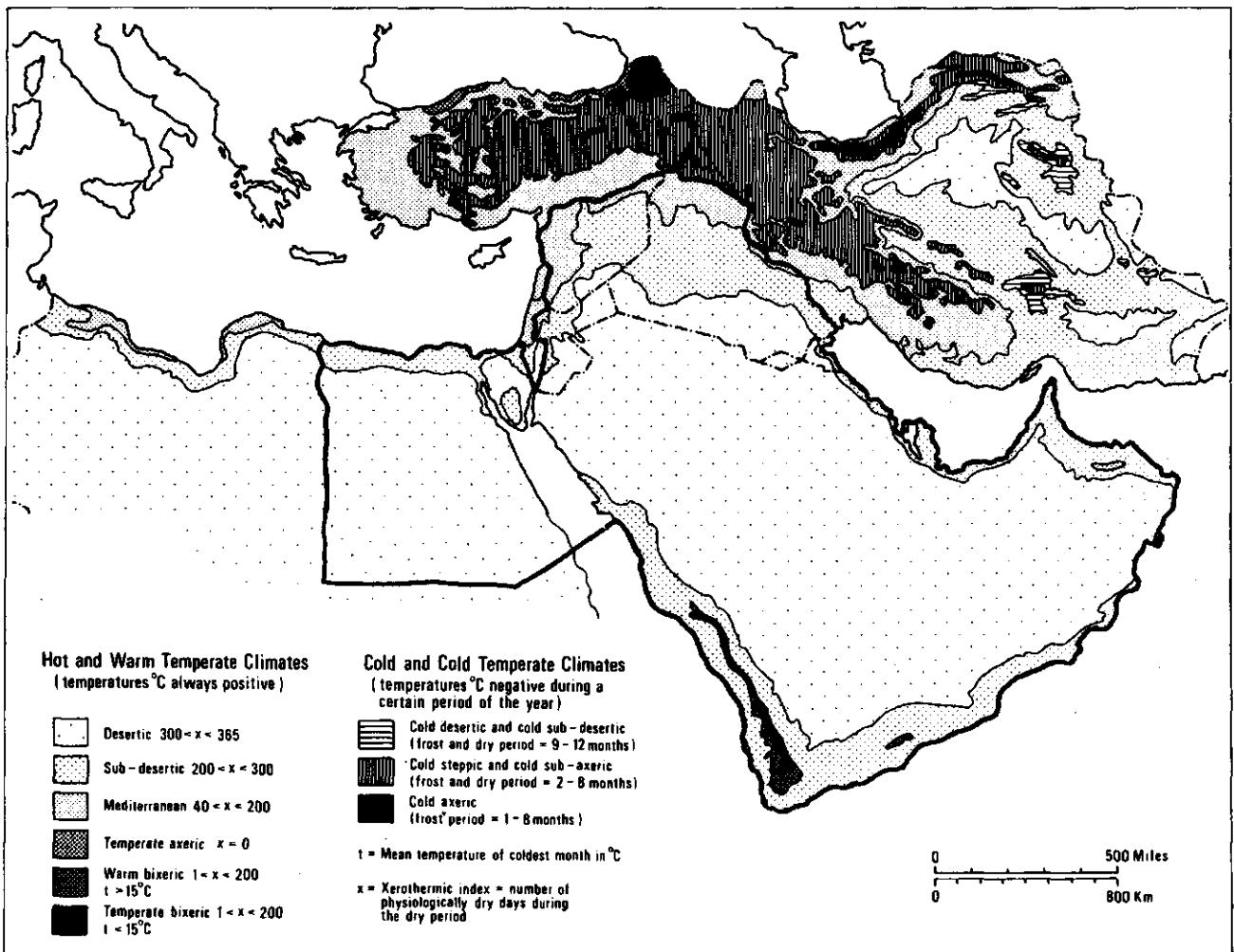


FIG. 2.38 Simplified Bioclimatic map of the Middle East. [Beaumont P. a.o., 1976].

In general, the humidity is very low. The relative humidity varies from less than 30 percent in the interior to almost 100 percent in a relatively small area near the Red Sea, the Arabian Gulf and the Mediterranean Sea coast. Based on these conditions, negative effects can be expected on landscape developments, especially if adapted plant species are not used. Effects which might occur are:

-Physiological heatstress, a result of high temperatures and high solar radiation levels. Air temperatures often exceed 40 degrees C. and surface temperatures sometimes exceed

80 degrees C. in mid-afternoon.

-Waterstress, a result of high evapotranspiration levels in plants and unreliable rainfall.

Both result in growth retardation, the wilting or death of plants.

### Soil conditions

The Middle East is dominated by desert soils including sand and lithosols [zoned shallow soils consisting of imperfectly weathered rock fragments] [figure 2.39]. Depending on the soil type, one or more of the following soil conditions should be considered in view of

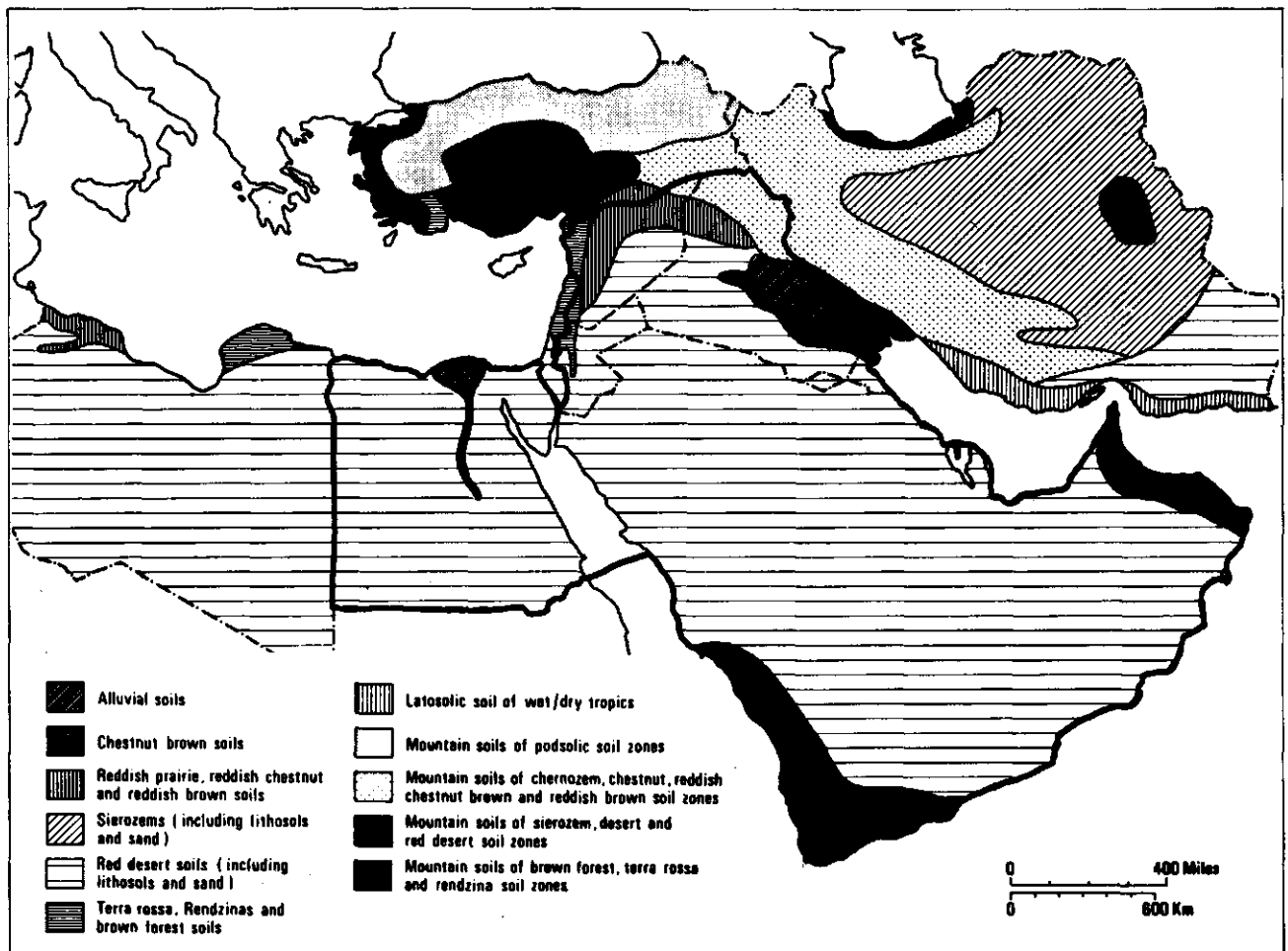


FIG. 2.39 Soil groups of the Middle East [Beaumont a.o., 1976].

urban open space design:

- Extreme alkalinity.
- High salinity, especially in sabkah areas [salt planes] due to upwards water movement in the soil profile, resulting in the accumulation of salts and other soluble products in the upper layers of the soil.
- Deficiency of certain minerals beneficial for plants.
- Lack of moisture, with the exception of the wadi side slopes and valleys which may have higher fresh water tables which can support vegetation.
- Lack of organic matter, with the exception of alluvial soils found in river beds and wadis.
- Hard pans, which are generally impenetrable for water.
- Poor soil structure, which generally implies lack of possibilities to store water.

### Hydrological conditions

In principle general hydrological characteristics to be considered can be described as follows:

- In many areas fresh water is the missing element.
- The majority of the land receives less than 100 mm of rain annually.
- The evaporation rate of soil-moisture is high, sometimes 15-30 times the annual rainfall.
- When rain does occur, surface water runoff collects from large drainage areas in wadis [dry river beds] and shallow depressions.
- Underground natural water reservoirs [aquifers] mostly contain fossil water which,

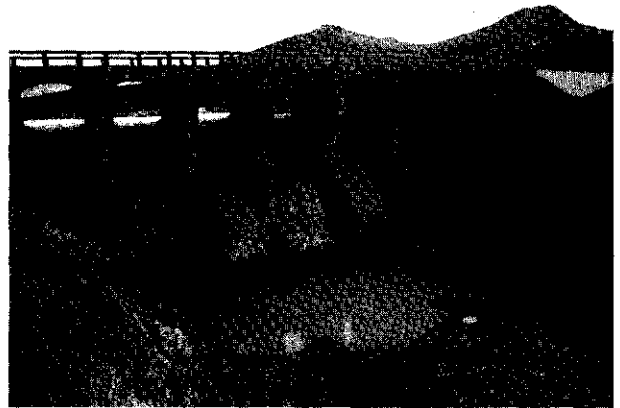


FIG. 2.40 Akramah dam, Taif, Saudi Arabia. Water storage in The Wadi Wajj west for agricultural purposes [Pesce, 1984].

if used, are not naturally replenished<sup>41</sup>.

-Stagnating surface water tends to be relatively saline due to the high evaporation rates.

-Runoff water is difficult to store, and cannot form natural pools and lakes, nor can adequate amounts be stored from one rainy season to the next. However serious attempts are made to cope with this problem, as for example in the Taif and Abha region in Saudi Arabia [figure 2.40] and in Egypt, Yemen and Iraq. Here dams are built to form artificial lakes.

### 2) Natural vegetation

The natural vegetation in the Middle East belongs mainly to the Tropical Semi-Desert Shrub Association [Eyre, 1971]. In general the vegetation consists of isolated tussocks of grasses where individual plants or tight plant groups deplete soil moisture all around them;

<sup>41</sup> It is estimated that the fossil water in Saudi Arabia, captured in sedimentary rocks during their formation, is between 25,000 and 30,000 years old.

in wetter and more sheltered places, larger shrubs, palms and trees are found. The exploitation by nomads, however, has in many places left a profound mark on the vegetation cover, due to over-grazing [Adams a.o., 1978].

Vegetation can control ground water levels [root zones can keep water for longer times] and prevent soils from being easily moved by the wind. To illustrate the effect of vegetation

on sand movement by wind the following two diagrams are given. The diagrams compare the wind velocity at different heights above a dredged fill sand area and a natural vegetated sand sheet [vegetation cover eight percent of the surface] in Jubail [figure 2.4]. The diagrams show that the wind speed equals zero above a vegetated sand sheet area at a height of 0.295 cm and above a dredged fill area at a height of 0.007 cm by a wind speed of

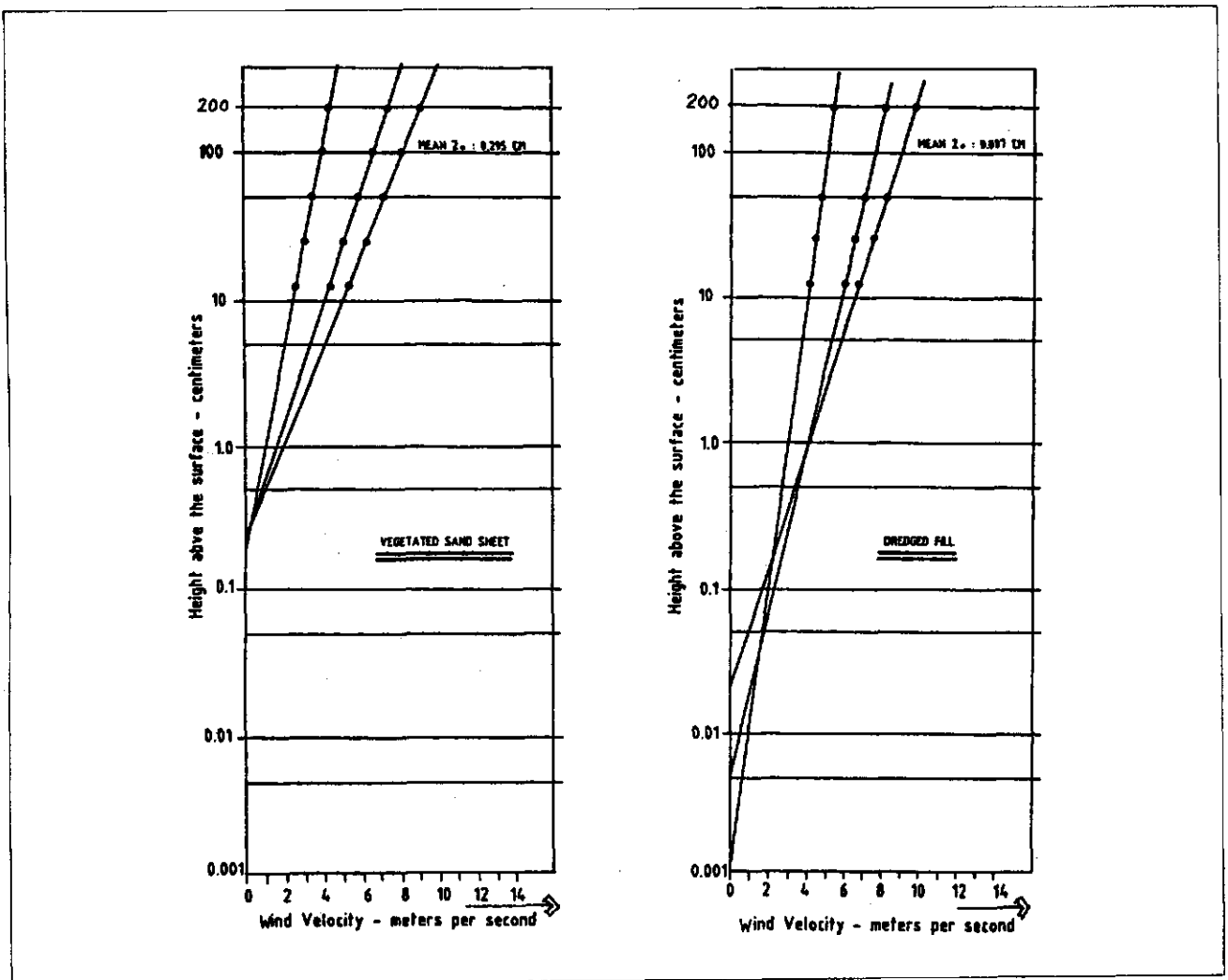


FIG. 2.41 Sand movement and wind velocity at different heights above a dredged fill area and a vegetated sand sheet in the Jubail region. [KFUPM/Research Institute; 1985].

8 meters per second, which is the threshold for sand movement [KFUPM/Research Institute, 1985]. This means that sand and dust particles in the dredged fill area will move sooner than in the vegetated sand area, because particles will be more easily picked up by the wind.

Despite the capability of natural vegetation to hold sand, the use and preservation of natural plants seems hardly to occur in urban green areas [figure 2.42]. One of the reasons that preservation of natural vegetation in urban green areas is still rare might be the dislike people seem to have for some species of desert vegetation. When I discussed this with several groups of students<sup>42</sup> it seemed that desert shrubs and groundcovers are especially disliked, since they remembered the surrounding hostile and harsh desert environment, an environment they seem to want to forget when they are in a park area<sup>43</sup>.

It should be noted that in practice natural limitations and potentials are often denied. This may result in unsatisfying open space designs for both users and clients, as for

<sup>42</sup>] The discussions took place in 1984 and 1985 at The College of Environmental Design, King Fahd University of Petroleum and Minerals in Dhahran [Saudi Arabia] with under-graduate student who took my course 'Introduction to Landscape Architecture'.

<sup>43</sup>] This might be an plausible explanation since also the hostile nature of the country side in Egypt make houses and villages to open inwards to the center and turn their backs on the outside world, to avoid a direct confrontation with the hostile environment [Fathy, 1973].

example: 1) Use of non-native plants with resultant high maintenance costs due to replacement of plants and/or extravagant, often costly, water use.

2) Planting in poorly drained areas with resultant high groundwater levels due to irrigation activities, which causes drowning or bad growth of plants, and water nuisance in open spaces, as an example [figure 2.43 and 2.44].

3) Removing natural vegetation with resultant sand blow, which causes accumulation of sand in urban areas and requires continuous removal of dust and sand<sup>44</sup> [figure 2.45].



FIG. 2.42 Park area at King Fahd University of Petroleum and Minerals in Dhahran, Saudi Arabia. Rare example of the preservation of natural vegetation under palm trees to reduce dust and sand blow [1984].

<sup>44</sup>] Information derived from observations by the author in Jubail -camp 11- [Saudi Arabia] and at the King Fahd University of Petroleum and Minerals campus in Dhahran [Saudi Arabia], in the period 1985 - 1987.





FIG. 2.43 Trees grow badly due to high water groundwater level, caused by bad drainage and over-irrigation [Jubail, Saudi Arabia, 1985].

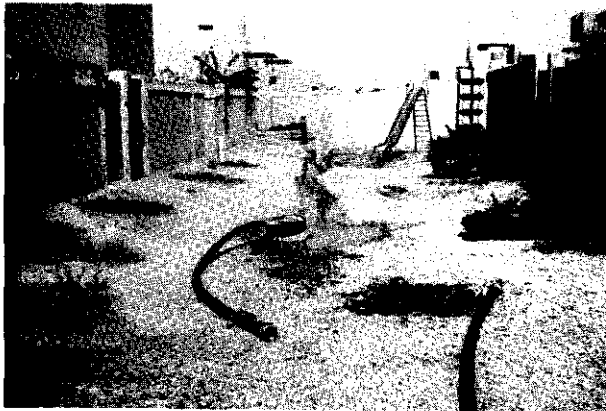


FIG. 2.44 Accumulation of irrigation water in Camp 11 in Jubail, Saudi Arabia. Camp 11 is build on a sand filled area, without providing adequate drainage. [1986].



FIG. 2.45 Sand accumulation along the Airport Road in Jubail, due to the destruction of the natural vegetation in the adjacent area caused by construction activities [1985].

The importance of taking into account the limitations and potentials of the natural factors in design is also expressed in the Sharia.

### Natural factors and Sharia

Two fundamental objectives of the Sharia [Divine Law] are:

1) Making nature prosper to the utmost so that man shall enjoy and benefit from nature to the utmost [Llewellyn, 1983].

2) Preventing damage to the environment<sup>45</sup>.

Designs therefore should express, both physically and symbolically, the human trusteeship [Khilafah] by establishing a reciprocal relationship or symbiosis between nature and man [Masoud, 1987]. According to Sardar this trusteeship implies that "Islamic environments must show respect for natural topography such as land form, waterbodies and woodlands and climate to which it must respond in the same manner as 'sand dunes respond to wind'. Islamic environments must not deprive the human psyche of the experience of nature and ensure a balance between the organic and the inert<sup>46</sup> and, they must be sensitive to the nature of tools and materials" [Sardar, 1985]. The avoidance of wasteful extravagance, seems to be important in this approach. This is derived from an expression by Mohammed in his

<sup>45</sup> Damage of all forms is forbidden in Islam. The Prophet says "No such damage or retaliation for such damage is allowed" [Little, 1985].

<sup>46</sup> With "balance between the organic and the inert" Sardar expresses, in my opinion, the balance between living and non-living nature.

prohibition to waste water in washing for prayer even when an abundant flowing river is present [Fathy, 1973 and Llewellyn, 1983].

Koran and Hadith and rules of Sharia may be positively interpreted [or are interpreted by Muslim scholars] for an adequate policy concerning the use of natural resources<sup>47</sup>. If there will be a clear religious injunction the waste and bad planning would not occur in the Muslim countries. This is, however, not the case.

In the last decade the awareness of the relationship between conservation of nature and Islam in design is growing. For example, in Saudi Arabia the Department of Islamic Studies, Faculty of Arts and Humanities of the King Abdul Aziz University in Jeddah issued in 1985 the book "Islamic Principles for the conservation of Natural Environment". This book was followed by a article in the newspaper "Arab News". The article expressed the importance of the balance between the carrying capacity of the land and land use, out of the point of view of Islam [Little, 1985].

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47] This approach does not differ from general accepted planning and design approaches in many non Muslim countries; only the line of approach, via Koran and Hadith, seems different.

## 2.2 DESIGN CONCEPTS AND THEIR EFFECTS ON ARAB-MUSLIM OPEN SPACE DEVELOPMENT IN THE MIDDLE EAST

Contemporary open space design in the Arab-Muslim region of the Middle East has its problems and its inherent weaknesses. In order to grasp the content of these it is essential to understand the evolution of open space in human settlements since the rise of Islam. This evolution can be recognised in various examples of open space layouts which are often anchored in traditions, but are also influenced by some of the other factors described in paragraph 2.1 [Trancik, 1986 and Wagstaff, 1985].

This paragraph does not present a precise chronological overview of open space design concepts in the Arab-Muslim realm, but intends to give some insight into types of approach that are dominant in urban design. In the description of the design concepts only the most relevant factors determining open space are stressed.

Open space design movements in the study area can roughly be divided into the following two categories:

- 1) A traditional Muslim design approach, ranging from the seventh century till approximately 1850.
- 2) A modern design movement, ranging from approximately 1850 till the present<sup>48</sup>

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48] These categories are derived from the division in periods Waardenburg distinguishes in Islamic history: early times sixth century

During the so called "Traditional Period" design concepts were related to, or based on, forms and processes of a social, cultural, and religious character that at the time were of a primary significance to the population [Waardenburg, 1987]. The Modern Period is characterized by Waardenburg as a time during which the Muslim world saw many radical changes due to the hegemony of European colonial powers. Many traditional production systems and community sectors which were not in accordance with the political and economic standards set by the Europeans diminished or disappeared [Waardenburg, 1987]. This period is discussed in paragraph 2.2.2.

### 2.2.1 TRADITIONAL ARAB-MUSLIM DESIGN CONCEPT

The Arab-Muslim open space approach from the seventh century till 1850 was based on traditions of local or regional origin and on the behaviour codes dictated by Sharia, such as users responsibility, privacy and waqf system. Physical remains of the traditional design, for example open spaces in old quarters and centers, may still be observed in many places. Yet in many cities the character of these areas has changed. Neighborhoods and dwelling clusters are often no longer the specific territory of one extended family or tribe group. Areas are no

until 661, 'medieval' times between 661 and approximately 1850 and modern times starting approximately around 1850 [Waardenburg, 1987]. Based on the description of 'traditional period' the first two periods are taken together.

longer subject to the control of the users as authorities have generally taken over responsibilities regarding open space. In some remote areas, for example in Saudi Arabia [Aindar Village], user's direct control is still prevalent in the shaping [i.e. design] of the immediate environment [Al-Jamea, 1985] [figure 2.46].

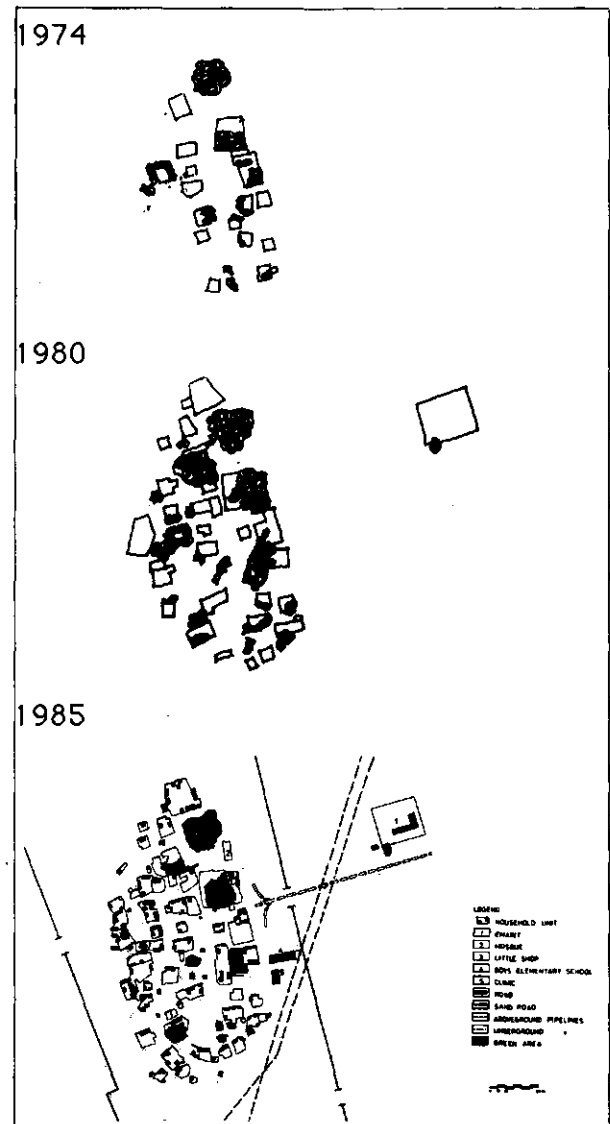


FIG. 2.46 Development of Aindar Village, Saudi Arabia, between 1974 and 1985. Extension of the village is based on autonomous synthesis [student project by Al-Jamea, 1985; supervised by the author].

Many quarters and centers are in the process of urban renewal in which preservation of the Islamic image has become an objective due to the rising interest in historical heritage [Kuban, 1978]. In order to understand traditional open space the rise of the early Arab-Muslim urbanization process and resulting characteristics are summarily recorded.

### Early Arab-Muslim urbanization context

During the early Arab conquests Islam spread rapidly over the Middle East. This speed forced Islam to adapt itself partly to cultures of those countries it encountered and absorbed. Another reason of this adaptation and absorption process is found in the circumstances that "even though the Muslims had enjoyed a long tradition of literary arts from pre-Islamic times, they did not possess a physical culture or major architectural precedents which could substitute that of the conquered peoples" [De Montequin, 1983]<sup>49</sup>. Islam assimilated and synthesized everything. In the urbanistic sense Islam's capability to assimilate is found in the way Muslims coped with the urban heritage of previous Egyptian, Greek and Roman civilizations. The forms of these civilizations were transformed by the Muslims in their cities and utilized according to their own needs and were eventually fully absorbed. Examples are the integration of Roman-

<sup>49</sup> What De Montequin says, has been said since the nineteenth century by many Orientalist-scholars [observation Kuban, Technical University, Istanbul, 1988].

Hellenistic layouts in their city expansions [figure 2.47] [Beaumont, a.o., 1976] and maintaining the Graeco-Roman *thermae* [public bath] as social gathering places. These places were, however, transformed by them in more modest dimensions and more to the practice of bathing [De Montequin, 1983].

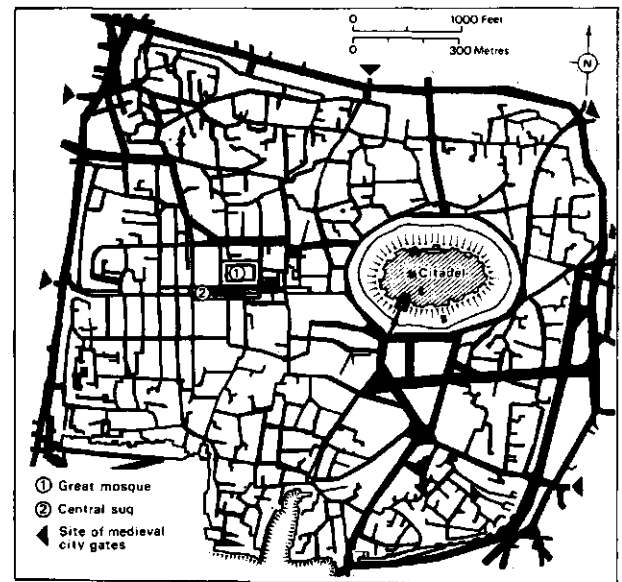


FIG. 2.47 Old Aleppo in Syria, showing street pattern in 1941. Roman-Hellenistic influences are still evident around the central suq [Beaumont, a.o., 1976].

The difference between cities preceding Islam and early Islamic cities is therefore mainly found in differences in the social structure and not in the general physical aspects [communication Kuban, Technical University Istanbul, 1988].

In the beginning of the Muslim era during the Arab conquest [632-660], when the Muslims were advancing through most urbanized areas of East and West, they established some new cities, and settled more in existing cities as: Damascus [Syria]

[634], Jerusalem [Palestine] [634] and Alexandria [Egypt] [642]. When necessary, they changed, functions of buildings [i.e., churches into mosques] or built new mosques and sometimes added new quarters. The original Muslim conquerors brought only the 'germ of their society' to the conquered areas. After the ninth or tenth century Muslim society became mature and could add distinctive Islamic elements such as madrasas [religious schools], expressing the character of the Muslim community [see also page 41]. The forms used to express this character were often based on the cultural roots of the conquered lands, due to the flexibility and tolerance of nascent Islam [see also page 40]. As indigenous urban development continued under Islam, the result was a plurality of forms and styles which characterized the Islamic culture as a culture which cannot be defined by the homogeneity of its material products [Kuban, 1983]. This is a statement valid till today as we will see in the next paragraph 2.2.2 [modern design concepts].

Early Muslims cities were mainly military camps like Basra [635] and Kufah [639] in Iraq and Fustat in Egypt [642]. Later on more cities were founded among which the palace towns, which were the most spectacular ones. Examples are Cairo in Egypt [641], Baghdad [762] and Samarra [835] in Iraq [De Montequin, 1983 and Wagstaff, 1985]. During this maturing process of the Islamic society the traditional design style evolved with fundamental and spiritual characteristics which had its roots in both cultural/religious and regional traditions.

### Traditional Arab-Muslim city characteristics

Since only a few medieval city remains, dating from the seventh and the ninth century, are found in the region, for example Fustat in Egypt [Grabar, 1983 and Kubiak, 1987], generalisations given here are mainly based on eighteenth and nineteenth century cities.

The Muslim city is a functional one with a strong social structure and a strong sense of privacy, mainly focused on the status of women in society<sup>50</sup>, according to the Sharia. Physically this was expressed in an urban community configuration with a strong functional division which gave to it a rather specific structure consisting of the Friday mosque, suq or bazar, the courtyard houses [contiguous but unconnected rooms, each giving access to common gallery or atrium], the blind alleys, unobtrusive entrances to individual structures and the tri-fold division into private, controlled semi-private and public space. These are recognizable in almost every Muslim city in the past. This similarity in structuring of the

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<sup>50</sup> The strong sense of privacy of women may have been developed after the early Muslim period and the early Middle Ages [communication Kuban, Technical University Istanbul, 1988], due to migration to cities [Brown, 1988]. This often leads to dense city patterns due to the scarcity of suitable locations for settlements in the hot and arid climate of the region [Ardalan a.o., 1973]. Furthermore the segregation of sexes was much more pronounced in urban society than in traditional nomad groups [Kubiak, 1987], probably caused by the exposure of women to men not belonging to the own tribe in urban situations.

traditional Islamic cities may be the result of:

- A clear segregation into male and female spheres [Abu-Lughod, 1983].
- The original lack of a strong material, construction and urban Arab-Muslim tradition.
- The priority given to the forces of natural instincts, an important characteristic of the Nomad behaviour from which the Arab-Muslims mostly descended [Kuban, 1972 and De Montequin, 1983].

If the latter is true it is plausible that the 'rational' structures of the conquered Hellenistic and Roman cities might have not been positively appreciated. This resulted in the shaping of a more natural and 'biological' urban configuration [De Montequin, 1983]<sup>51</sup>.

City configuration was, however, not only a result of segregation into male and female spheres and of life nomadic instincts, but in the long run a result of design decisions made by the users themselves [autonomous synthesis], as stated already in paragraph 2.1.1 [users responsibility]. This resulted in open spaces which were mainly spaces left over from [privately owned] buildings [Akbar, 1984], often creating organic open space patterns, varying by quarter and city [Abu-Lughod, 1983]. Based on the views of Kuban, de Montequin, Akbar and Abu-Lughod

it seems that the layout of Arab-Muslim cities was generally not the result of a common set of building types generated by a common building process and building technology and combined according to a common set of general [governmental] rules. It seemed mainly a result of a series of individual building activities undertaken instinctively by users and based on regional and Islamic social/cultural traditions<sup>52</sup> and economical and political considerations. The above statement has, however, to be considered as a generalisation as several cities were partly or completely planned by administrators and rulers [see page 18]. But as we have seen in paragraph 2.1, in almost every one of these cities certain areas had to be developed by users themselves. A process in which users took into account traditional design considerations based on instinct, social and religious traditions and environmental and socio-economic conditions. As cities were often racially and economically fragmented developments within the urban area seem to differ considerably<sup>53</sup>.

52] Regional traditions continued to play an important role in the early Islamic period as "The process of arabization in the Middle East brought into being an Arab culture zone characterized not only by Arab high culture but also by an emerging Arab general culture in which certain dominant Arab characteristics were melted together with native characteristics" [Weiss and Green, 1987].

53] Kubiak states in his study regarding Fustat in Egypt that the absence of racial and economic uniformity resulted in town quarters varying between densely built and semi-rural, in which houses were set far apart on large plots of land [Kubial, 1987].

51] Classical geometry was destroyed or not longer applied during the middle ages also in the West and the Byzantium Empire. It is not only an Islamic city characteristic [communication Kuban, Technical University Istanbul, 1988].

The design approach in the traditional period can be summarized as a "top down" approach in which planning directives were issued by authorities and/or a "bottom up" approach in which authorities were not involved in the planning and design of the urban environment. In this way open space took shape of which the typical examples exist even today. In the next paragraph the characteristics of traditional urban open space units are elaborated and illustrated with present examples.

### Traditional open space units and their characteristics

#### Courtyard

Courtyards can generally be divided into private, public and semi-public. Private courtyards are part of a single or extended family dwelling unit. They provide for private open space, cool the building, allow contact with nature and give acoustic protection [figure 2. 48].

Public courtyards are found in:

- Wekala. Large public buildings consisting of shops, workshops, warehouses and rooms for the accomodation of people; they are laid out around a central courtyard. The building is generally an integral part of the suq or market area [figure 2.49] [Hakim, 1986]. They have been in use in many countries up to the present, either for craft and commercial business or for permanent habitation and work [Mimar 14, 1984].
- Funduk, khan or han. A hostelry for lodging

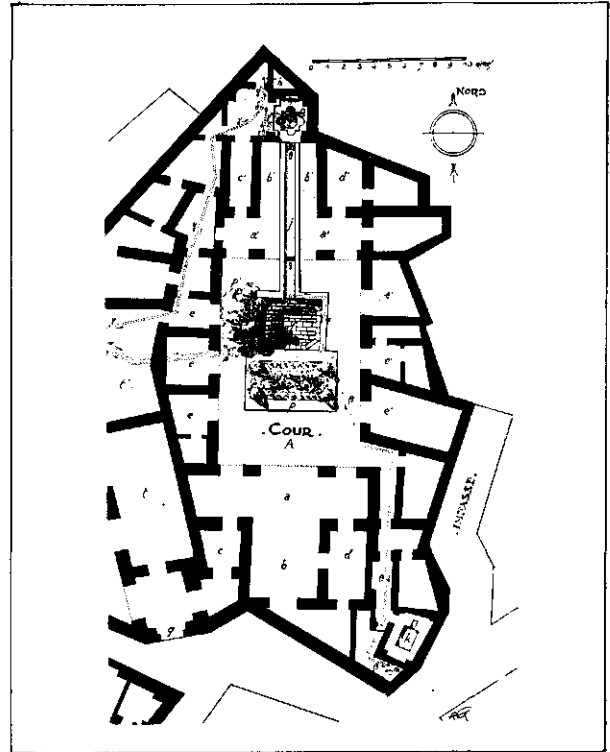


FIG. 2.48 Plan of courtyard house in Fustat, Egypt. The courtyard forms a secluded space for the family in which they can enjoy nature [Grabar, 1984].



FIG. 2.49 Plan of wekala in Egypt. The buiding is an integral part of the built area [Mimar 14, 1984].

foreign -non Muslim- merchants who can display and sell their products. Groundfloors

are used to house animals and storage rooms. The building is planned around a courtyard [figure 2.50] [Hakim, 1986].

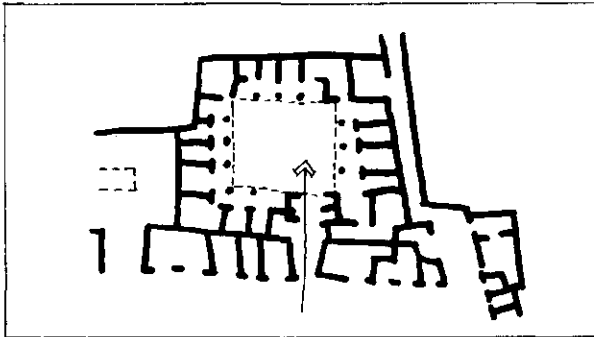


FIG. 2.50 Plan of funduk in Tunis [Hakim, 1986]. Example of the Arab-Muslim region was not available.

- The Mosques. Many large mosques have courtyards surrounded by arcades. Courtyards are used for prayer when the covered mosque space is not adequate for large congregations on Fridays, or during religious festivals [figure 2. 51 and 2. 52] [Hakim, 1986].

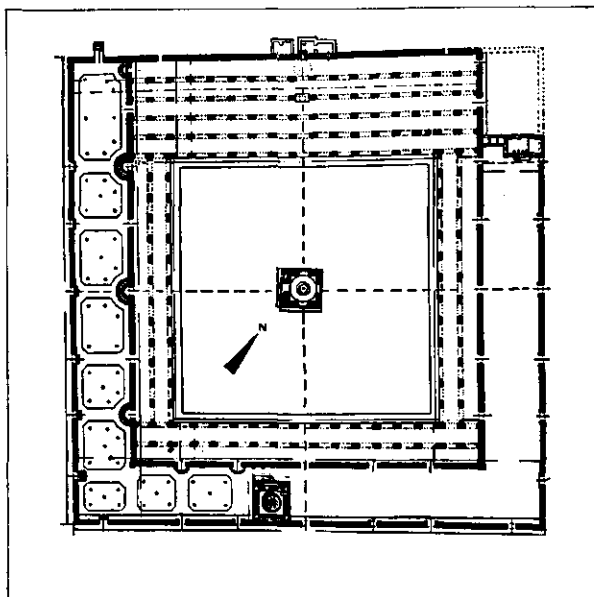


FIG. 2. 51 Plan of mosque of Ibn Tulun [Egypt], built between 876 and 879 Hoag, 1977].

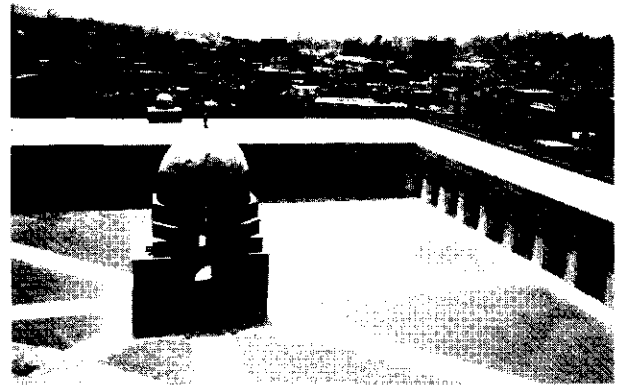


FIG. 2.52 Courtyard Mosque of Ibn Tulun in Cairo, Egypt.

Semi-public courtyards occur in:

- Theological schools or madrasas. Buildings consist of rooms used as dormitories and studies, arranged around a central courtyard. The courtyard is sometimes surrounded by an arcade. It may also have a mausoleum connected with it [figure 2. 53] [Hakim, 1986 and Mimar 14, 1984].

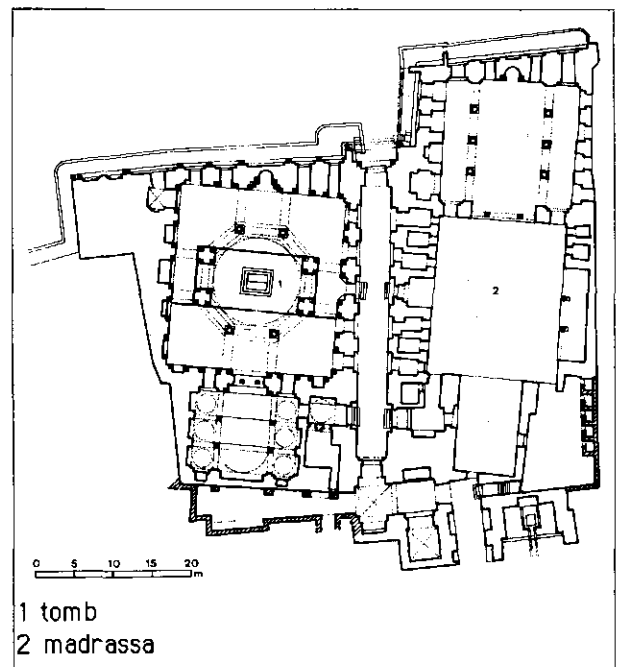


FIG. 2. 53 Plan of madrasa of Sultan Qalaun in Cairo, Egypt; built between 1283-1285 [Hoag, 1977].



which is the reward for all faithful Muslims and which acted as a source of inspiration for the traditional garden concepts [Ettinghausen, 1976]. The image of Paradise is expressed in many Sura's of the Koran<sup>59</sup>. The Koran often portrays images that were familiar to the believers and analogies that were easily understood. Another factor which affected garden design is the general ability of Muslims to adapt cultural goods [including garden concepts] they were exposed to and transpose them into their own ideal form [Otto-Dorn, 1965]. In this respect we can think of the contacts the Muslims made during their military expeditions in the Mediterranean area [661-750], in India [750-1258] and in Persia [9th and 10th century]. Also mass migrations by people

59] The image of paradise is for example very well expressed in the following Surah of the Koran:

Surah XIII, Verse 35: "The parable of the Garden which the righteous are promised! - Beneath it flows rivers: perpetual is the enjoyment thereof and the shade therein: such is the End of the Righteous; and the End of Unbelievers is the Fire." [Ali, 1934]. Its derived meaning in accordance to Ali is emphasizing that the joys of Heaven are not like the joys of earth which fade away or become disgusting. "The joys of Heaven are pure, lasting, and without any of the drawbacks which we associate with the joys of the sense". In this Verse garden is used as counterpart of fire, as misery versus complete happiness. The word garden also images beautiful rivers, perpetual delight and cool shades ever deepening as you proceed in the garden [Ali, 1934].

Other Surahs related to the paradise garden are: Surah II, Verse 25; Surah VI, Verse 131; Surah XIII, Verse 4 and 35; Surah XIV, Verse 23; Surah LXXVIII, Verse 13 upto 16; Surah LXXX, Verse 26 upto 32 [studentproject by Al-Zahrani, 1987].

from central Asia as the Seljuks Turks [11th century], the Lamtuna Berbers from the sub-Sahara region of West Africa [11th century], the Mongols from North China [13th century] brought foreign cultural elements to the Middle East [Otto-Dorn, 1965; Weiss and Green, 1987]. It is therefore probable that when Muslims started to translate the Koranic image of paradise into reality the Islamic image of paradise became fused with design concepts based on the nature of pleasure gardens existing in countries with which Muslims became familiar. Muslims also incorporated in their gardens design considerations they derived by interpretation from the Koran. Interpretation was important since the Koran never gives direct garden design guidelines. Design considerations derived from the Koran<sup>60</sup> are first of all the application of flowing/running water<sup>61</sup>, springs<sup>62</sup>,

60] This partial study, was done by Al-Abdullah Mohammad Masoud, graduate student at the King Faisal University, Department of Landscape Architecture, Dammam, Saudi Arabia, in 1987, supervised by the author. In his study, by which he was inspired by Schimmel's publication "The Celestial Garden in Islam" [1976], Masoud has made an attempt to determine the Surahs on which garden design considerations might be based.

61] "Gardens with rivers flowing beneath": Surah II, Verse 25; Surah III, Verse 15, 195 and 198; Surah IV, Verse 13, 57 and 122; Surah V, Verse 12, 85 and 119; Surah IX, Verse 72, 89 and 100; Surah XIV, Verse 23; Surah XVI, Verse 31; Surah XVIII, Verse 31; Surah XIX, Verse 76; Surah XXII, Verse 14 and 23; Surah XXV, Verse 10; Surah XXIX, Verse 58; Surah XLVIII, Verse 5 and 17; Surah LVII, Verse 12; Surah LVIII, Verse 22; Surah LXI, Verse 12; Surah LXIV, Verse 9;

fountains<sup>63</sup>, fruit trees and fruit shrubs<sup>64</sup>, trellises<sup>65</sup>, and raised sitting elements<sup>66</sup>. In the second place the provision of shade<sup>67</sup> should be mentioned. And in the third place making people feel that gardens belong to them<sup>68</sup> and create happiness in people<sup>69</sup>. Gardens should also

Surah LXV, Verse 11; Surah LXVI, Verse 8; Surah LXXXV, Verse 11; Surah XCVIII, Verse 8 [Masoud, 1987].

62] "Gardens and springs": Surah XXVI, Verse 147; Surah XLIV, Verse 25 and 52 [Masoud, 1987].

63] "Gardens and fountains": Surah XV, Verse 45 [Masoud, 1987].

64] "Gardens of date palms and grapes .....": Surah XXIII, Verse 19.

"And we produce therein orchards with date palms and grapes": Surah XXXVI, Verse 34 [Masoud, 1987]. Based on sunnahs 58 and 59 narrated by Ibn Umar [Volume 1 of the Hadith by Al-Bukhari] it can be stated that date palms are important features as they symbolize Muslims. The Prophet said in these sunnahs "amongst the trees, there is a tree, the leaves of which do not fall and is like a Muslim" and He replies "It is the date-palm tree".

65] "If is he who produced gardens, with trellises and without, and dates, ...": Surah VI, Verse 141 [Masoud, 1987].

66] "They will recline on raised thrones": Surah XVIII, Verse 31 [Masoud, 1987].

67] "... To shades, cool and deep shading": Surah IV, Verse 57. "With trellises and Without"; Surah VI, Verse 141 [Masoud, 1987].

68] "Gardens as hospitable homes": Surah XXXII, Verse 19 [Masoud, 1987].

always be open to the public<sup>70</sup> [Masoud, 1987]. A last factor to be considered in relation to traditional garden concepts is the discussed regional cultural diversity that existed within the Muslim community as a whole. The cultural adaptations, cultural diversity and Koranic interpretations lead to the assumption that traditional gardens in Islamic countries were based less on a particular theory or doctrine than on the achievement of comfort and occasional prestige. In this Koranic interpretations, regional cultural and natural physical considerations played a major role [student project by Al-Zahrani, 1987]. Behind each garden concept was, however, a standard of perfection emphasizing order and unity which was mainly achieved by applying geometric form and rhythm in designs [for background information see paragraph Aesthetics]. This ideal seems always to have remained the main motivation of the designer.

### Fina

Generally, fina is defined as the space abutting one's property and used exclusively by residents of abutting properties. It can occur as part of all open space units mentioned earlier. The space abutting one's property can imply part of a street or a commonly used courtyard [figure 2.60] [Akbar, 1984 and Hakim, 1986].

69] "As to the righteous, they will be in gardens, and in happiness": Surah LII, Verse 17 [Masoud, 1987].

70] "Gardens of Eternity, whose doors will be open to them": Surah XXXVIII, Verse 50 [Masoud, 1987].

The exact space belonging to the fina is not precisely defined. According to Akbar finas can be defined by inhabitants or users of abutting buildings. The width of the street seems to be a main criteria for the width of finas<sup>71</sup>. The space can be used for activities such as trading [figure 2.61], the disposal or storage of possessions, herding cattle, sitting [figure 2.62], etc., as long as the user behaves according to the Prophet's Tradition and does not damage the rights of his neighbors or passers-by. Generally this implies a respect for the privacy of others, behaving modestly and avoiding the hinderance of passers-by [i.e. by erecting physical elements [figure 2.63] or planting trees]. As such fina can be considered as a semi-private space. In case of closely adjacent buildings, finas are jointly used based on the principle that man's usage should not cause harm to his neighbor. Decisions about the use of finas should therefore always be based on consensus among neighbors.

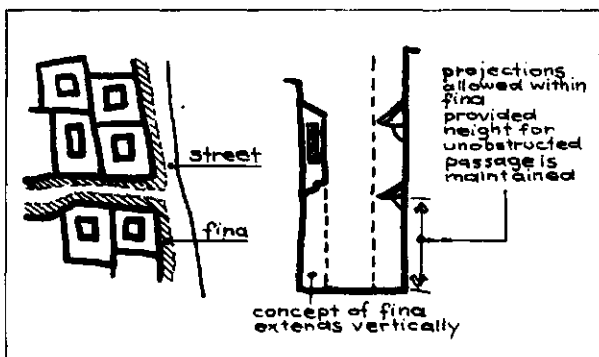


FIG. 2.60 Finas, schemetical plan [Hakim, 1986].

<sup>71</sup> Based on Islamic jurisprudence, developed during the ninth and tenth century it can be stated that the width of streets was an important criteria for defining finas [Akbar, 1984]



FIG. 2.61 Trading activities on finas in Cairo, Egypt [photo Veraart, 1988]. Trading activities are, however, partly extended into the street causing obstructions for passers-by, which is not allowed according to Islamic rules.



FIG. 2.62 Fina in Cairo, Egypt Space is used for sitting and drying cloth [photo Veraart, 1988].



FIG. 2.63 Waste container in Fayyum, Egypt. The container is placed in the wide street which keeps finas free for use by inhabitants and at the same time does not hinder passers-by.

### Traditional land-use pattern in urban areas

The characteristics of the traditional Arab-Muslim city were not only found in the open space space units mentioned before, but were also expressed in land-use patterns. According to Abu-Lughod generally the following three main types of land-use can be distinguished <sup>72</sup>:

#### 1) Commercial and industrial land-use

The scale of operations was generally small. Labour was utilized intensively and was often organized family-wise. Except for some larger noxious industries, such as tanneries and slaughterhouses, most commercial and industrial enterprises were concentrated in zones or belts consisting of the same type of

activity. In general the activities, that need larger areas such as the distribution of goods in large quantities were located towards the periphery of the city. High cost and small bulk activities, such as carpets and jewelry selling, were located as close as possible to the center of the city, often in suqs. Shops selling daily goods were scattered at close intervals throughout the quarters of the city [Abu-Lughod, 1978]. Generally the commercial and small industrial activities, such as workshops, were integrated in the residential areas [figure 2.64 and 2.65].

#### 2) Public land-use

Most public land-uses were of a religious nature. The religious activities were generally more than just worshipping, they often also included religious-educational,

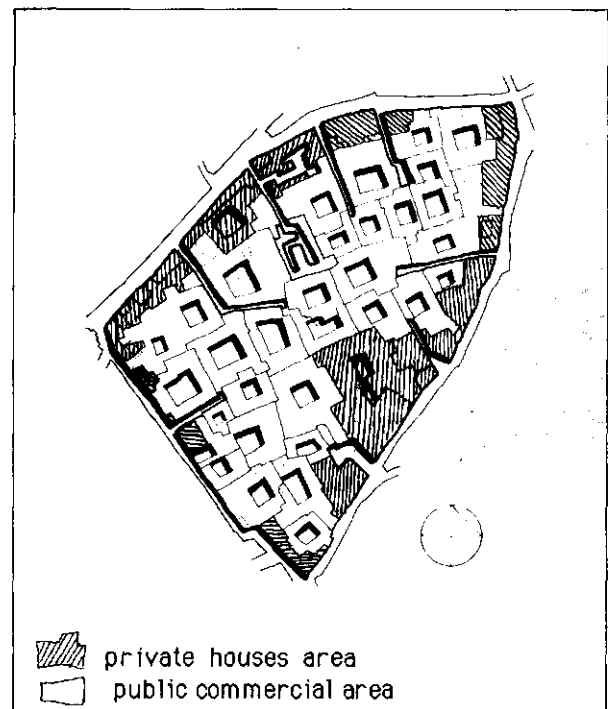


FIG. 2.64 Tunis, Tunisia. Plan of city centre showing the integration of private houses and public commercial activities [Khan, 1978].

<sup>72</sup> The division is considered general as each country had its own specific traditional land-use approach due to specific needs, economic and social circumstances, geographical siting and historical heritage [Abu-Lughod, 1978 and Kuban, 1978].



FIG. 2.65 Small workshops in an old residential area in Cairo, Egypt [photo Zuidema, 1989].

religious-political and religious-communal activities, such as schools, hospitals, clinics, housing for resident scholars [Abu-Lughod, 1978]. All these 'Islamic' activities were often directly related to mosques and this might be the reason that the mosque has become one of the main architectural features of Islam. The architecture of mosques may vary from country to country, but the overall arrangement of the building, such as form and relationships between internal spaces, tend to have great similarity <sup>73</sup> [Khan, 1978].

### 3) Domestic land-use

The urban area housed itinerants, institutional groups and family units. "Residential kinship" was often based on relationships such as family ties, ethnicity, clientage or occupation. This tended to reinforce the ties between the people due to

<sup>73</sup> According to Khan the similarity of mosques is mainly found in the form of the building, consisting of generally a square overall plan with covered colonnades along the qibla wall [Khan, 1978].

shared needs and responsibilities. Examples might be the responsibility for common facilities, such as access ways, administration of the quarter and rules of behaviour. An example of the last is the responsibility to use open space in such a way that others were not hindered [Abu-Lughod, 1978 and Akbar, 1984]. The spatial organization of the domestic areas consisted of an hierarchical ordering of inter-nesting residential cells, such as individual dwelling units, neighborhoods, districts and the town itself. The ordering was strongly related to the application of the private space concept and affected by traditions regarding user's responsibility and waqf [see page 17-21 and page 33-35].

### Traditional community organisation

The organisation of the different land-use areas was not only controlled by individual users but also by [users] associations which could be geographically defined, such as domains or khittas: areas for settlement allotted to various groups, generally tribal groups [Kubiak, 1987] or undefined such as sufi associations. Their common feature was a clear economic, social or religious bond that permitted a complete identification of the individual with the group. People belonged to one or several of the associations and defined their roles, rights, and responsibilities accordingly [Seralgeldin a.o., 1983].

The overall land-use organisation of the city was often determined by regulations issued by the state since a local city government was often missing <sup>74</sup>. Ideally those regulations

<sup>74</sup> The city was not a self governing entity

were conform to the Sharia. Originally the primary means to transform the Sharia into government controlled laws was a juridical system called 'qada'. This system was centered upon a court over which a judge, the qadi, presided. In the court of the qadi, claimant and defendant stated their case, witnesses were heard, and a decision was rendered. In applying the Sharia to particular cases and in relying upon governmental sanctions to underwrite his decision, the qadi helped with the realization and implementation of a governmental law. Furthermore there existed a court of appeals, the mazalim ["wrongs"] court and there was the muhtasib, an official appointed by the shurta [often translated as "police department"] who was supervised by the qadi and who was maintaining public decency [Weiss and Green, 1987].

## 2.2.2 MODERN DESIGN CONCEPTS

The aim of this paragraph is not to give a chronological overview of the modern styles since the mid nineteenth century and their manifestation in the Arab-Muslim countries in the Middle East, but to trace trends in modern design concepts and their implications for the open space structures. Furthermore the nature of the main problems that have accumulated in open space layouts under the impact of modernity<sup>75</sup> since the but was ruled directly by representatives of the state [Weiss and Green, 1987].

75] Modernity might be characterized by a continuous and rapid technological and intellectual change in the way of life and

nineteenth century is described.

The knowledge of these problems is essential for any improvement of contemporary open space design.

## The context of modernity

The most obvious feature which all nations of the Middle East exhibit since the mid nineteenth century is a massive migration to the cities caused by industrialisation and the agrarian revolution [Arkoun, 1986], as well as the policy of governments on the sedentarisation of pastoral nomads [Wagstaff, 1985].

This migration movement caused a fast growth of urban areas and often lead to the development of quarters inhabited by people belonging to different tribes and professions<sup>76</sup>. This growth together with the influence of the western countries who have colonized most of the area<sup>77</sup>, and the

thought of the Arab-Muslims since the mid nineteenth century [Arkoun, 1986]. It seems that modernity in the Arab-Muslim countries is often viewed as the opposition of tradition [Arkoun, 1986].

76] In currently laid out cities such as Yanbu and Jubail in Saudi Arabia, the development of residential quarters is no longer based on the the traditional principle that inhabitants should belong to one tribe or profession or should have a particular religious allegiance [see also page 41] [oral communication by C. P., Folsom, manager Ground and Landacape Group, Bechteld, Jubail Project, Saudi Arabia 1987].

77] Main western dominations in the second half of the nineteenth and first half of the twentieth century:

EGYPT: between 1882 and 1922 first dominated by France and subsequently by

advent of modernization, have put a profound mark on the Arab-Muslim way of life. From the second half of the nineteenth century onwards the life of the Arab-Muslims was strongly affected by the circumstance that they had to live in a structure which was for a great part determined by the West. The western dominance was characterized by military, maritime, political, technological and economical superiority which brought to the Middle East new goods and developments such as, transportation and communication means to make life easier and more convenient [Montgomery Watt, 1987].

One of the main results of this modernisation process is that Arab-Muslim countries when becoming independent had to redefine their own [cultural] identity and to shape a national political unity and economic cohesion [Holod, 1983]. The search for identity grew strongly in 1960, initiated by revival of the Arab League as a reaction on confusing social changes, which was in fact the re-affirmation of the Islamic identity [Montgomery Watt, 1987 and Waardenburg, 1987]. The development of national identities implied not only a recovery of an identity by regenerating

England. After 1922 the British influence continued until 1956.

JORDAN: dominated by England between 1916 and 1921.

SYRIA: dominated by France between 1916 and 1946.

IRAQ: dominated by England between 1922 and 1932.

SAUDI ARABIA, YEMEN, KUWAIT, UNITED ARAB EMIRATES AND OMAN: mainly British influences.

[Botje, 1978 and Peppelenbosch and Teune, 1981]

historical and cultural constituents but also integrating new wealth, mainly due to the oil boom, and modern technology in the concept of national identity. This integration initiated a modernisation process by which modern western products, including design ideas, came to the Middle East which made a return to pre-colonial identity concepts difficult as the pre-colonial past could not easily be incorporated in the modernisation process. [Arkoun, 1983]. Design concepts were important since they were a means to express in a physical way the aspirations of the new nations.

The process of economic development led to increasingly centralised decision making in the provision of public services, including the provision of public open space such as parks, roads and squares, and gradual expansion of government functions through new specialised ministries and executive departments. They took over the administrative, fiscal and regulatory responsibilities traditionally provided by community associations and kin groups. Decisions seemed from then on more to be based on the nature and urgency of problems than on ideological considerations or resource availability [Serageldin a.o., 1983]. The monopolising of decision-making by the state limited possibilities to adapt imported design ideas to the real needs and experiences of the people. The government decided which design concepts should be applied for which project; this seems the main reason that all kinds of often inadequate modern concepts came into being [Arkoun, 1986]. For example, from the 1950's onwards in the Middle East

European apartment houses were built which were often inappropriate to the climate and the existing urban forms and they were often not adapted to the social-religious organisation of those villages and cities [Smithson, 1973].

According to Holod in most of the applied modern concepts the main ideological considerations to give shape to the mental needs and social/religious expectations found in the Koran and Hadith are neglected: Koran and Hadith, however, should be considered a 'living present' which carry general modes of behaviour and memories, which are only partly affected by specific national or regional differences [Holod, 1983].

The application of modern design concepts, however, was not only caused by the stamp colonizers wanted to put on their colonies and the search for national identity, but also by the introduction of a modern life style which created new needs. These needs, such as vehicular accessibility, together with the need for forms of building that can exclude noise, traffic and heat from living places, scaling up of production, shops<sup>78</sup> and service facilities, can reasonably be considered as permanent aspects of life and can therefore not be denied [figure 2.66].

The effects of the importation of 'modernity' by colonizers and afterwards by national governments were mainly twofold. Firstly,

<sup>78</sup>] The causes for scaling up production and shop facilities are mainly found in the industrialization process of the Middle Eastern countries which initiated a marketing trend towards larger and fewer facilities for ease of delivery and so on [Smithson, 1973].

modernity introduced western technology and design concepts, and by accepting this the Arab-Muslim region was often unwillingly affected by the western conception of life [Arkoun, 1986 and Montgomery Watt, 1987]. Applied western design concepts did not have any spiritual basis but, rather, took the possibilities of the modern technology as its point of departure [Kostof, 1986]. In this respect these concepts represent a continuation of the western tradition, often erasing Islamic social-religious values which characterized cultural life during the traditional period [Arkoun, 1986]. Secondly social changes took place, of which secularization might be the most obvious one. Secularization separated the Divine Law [Sharia] from the national jurisdiction in most countries of the region<sup>79</sup>. An exception is for example Saudi Arabia where the Sharia is still exclusively used [Peppelenbosch and teune, 1981]. Due to

<sup>79</sup>] The basis for the secularized jurisprudence was laid by the French and British colonizers. None of the countries completely abandoned the Sharia Law. In practise, however, the jurisprudence of the colonizers prevailed. Even if the Islamic personal law was maintained, it was interpreted from a western point of view by both western and Islamic judges [Montgomery Watt, 1987]. Only the Islamic law of succession was not changed much, because it was very strongly anchored in the Koran [Peters, 1987].

"Secularisation was not a simple change in material civilization but it was a radical shift from a traditional mental structure and space to a modern one. All the knowledge inherited from the time the Sharia was the only legislative body is either cancelled or reinvested in the new cognitive vision, methods and postulates, changing cultures and social structures" [Arkoun, 1986].



secularisation the social-religious open space vocabulary used in former traditional societies seems no longer relevant in the modern one. Religious-social metaphors, signs, values, truth, absolute and related qualifications seemed from then on to be reconsidered in the context of intellectual modernity, such as modern western design approaches, and technological knowledge [Arkoun, 1986].



FIG. 2.66 Traditional alley in Khobar, Saudi Arabia. The photo shows the physical effect of the installment of air-conditioning units in buildings which were originally not designed for these devices.

## Implications of modern concepts for open space

### 1) Standardization of design norms, regulations and principles

The process of modernisation has created a growing alienation between the users of open space and the procedures by which the open space is provided. From the early twentieth century onwards the provision of these spaces has become programmatically routinised and more efficiently [Serageldin a.o., 1983 and Kuban, 1983]. Governments tend to grasp the user's needs by developing quantitative and quality norms and specific planning and design regulations and principles, such as the zoning of functions, to ensure efficient utilisation of space and to create health, safety and welfare for the citizens<sup>80</sup> [Serageldin a.o., 1983 and Trancik, 1986]. Zoning legislation, however, separates functions that had often been integrated, such as residential, commercial and small workshop activities. This separation decreases the traditionally existing physical and social diversity of urban areas since zoning ordinances often fail to recognize the importance of spatial order to the Islamic life with its accent on privacy [Khan, 1978 and Trancik 1986]. This tendency can be found in all countries in the Middle East, since governmental authorities have taken a broader range of responsibilities and have almost completely replaced the traditional autonomous synthesis process of decision

<sup>80</sup> "Zoning operates under normative assumptions about human welfare and happiness" [Trancik, 1986].

making [Peppelenbosch and Teune, 1971; Akbar, 1984 and Serangeldin, 1983] [see also page 21 and 22].

Newly introduced organizational principles were often felt to be alien by the Arab-Muslim society since they interrupted the continuum that existed between the traditional social-religious organization principles and the built environment [Boon, 1982]. The application of western standards is evident in the layout of a residential high-rise complex in Jeddah [figure 2.67] and the Hail Al-Huwaylat district in Jubail [figure 2.68], both in Saudi Arabia.

## 2) Mass production of building materials

In modern design concepts, until approximately the 1970's, emphasis was put on economic and social arguments in favour of mass-production in building<sup>81</sup>. The mass-production in building made people accept the idea of standardisation, including its frequent lack of possibilities to respond easily to changing users needs over time, as is illustrated in Sheikh Hassan in Fayyum, Egypt<sup>82</sup>. After the 1970's in many cases there seems to be no longer an economic argument in favour of mass-produced

<sup>81</sup> Mass-production "would give houses to those who previously had none, would raise the standard of living, and would create, it was believed, a society of artisan heroes" [Smithson, 1973].

<sup>82</sup> This inconvenience might be acceptable to the decision makers as the greater good was housing the people.

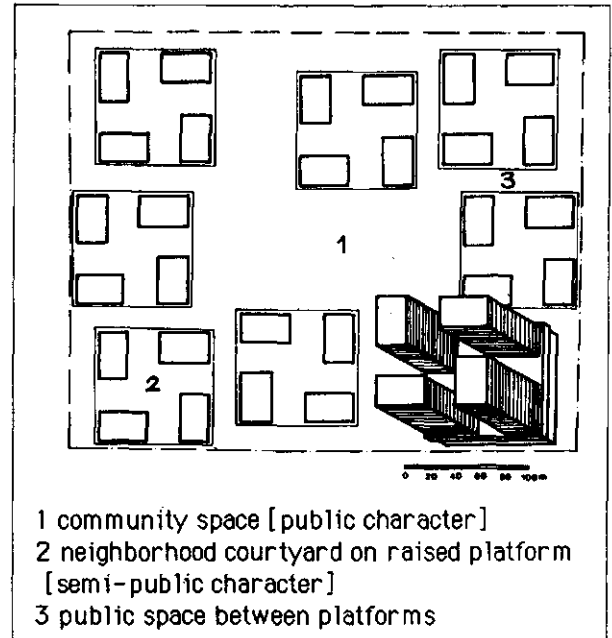
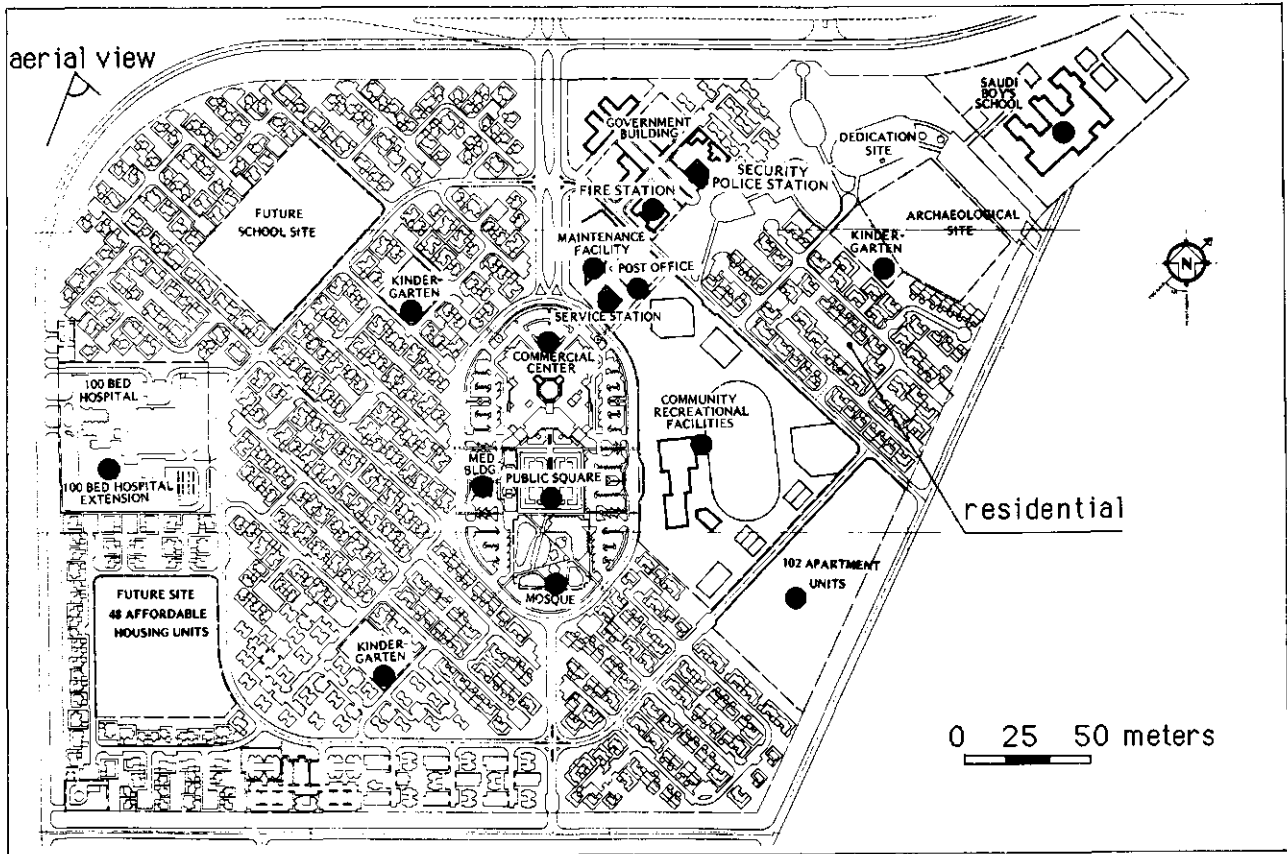


FIG. 2.67 Residential high-rise complex in Jeddah, Saudi Arabia [Konash, 1984]. On this design two comments might be made:

1) In the design approach the municipal authorities seem to have replaced the users as the clients for whom open is created. Users seem to be categorised as general and prospective beneficiaries. The open space design might be characterized as a hierarchically uniformly ordered open space structure in which no attention is given to the fact that users are rarely a homogenous group of people.

2) The four central courtyards are probably intended as private open space, based on social-religious considerations. In practise, however, they will not function as the conditions for use are not adequate. Inhabitants of dwelling units surrounding the courtyard and who will probably not belong to one [extended] family, can see the users without obstruction. These circumstances make the place unsuitable for free use by women and families, which may be considered one of the main objectives for designing courtyards.

Note: At the moment this text is written Saudi authorities have not housed a single family in any of such projects, constructed as "rush housing project" in 1980, in principal cities in Saudi Arabia [Dammam, Jeddah, Riyadh and Khobar]. Reasons for this hesitation [delay]



might be:

- The future inhabitant group was never properly identified by the decision makers on the program.
- The designers had no proper access to information about the potential users and their needs.
- Multi-family and high-rise housing might be unpopular among Saudis.
- Private market interests [e.g. a drop in rental charges in the area], as well as technical, administrative and cultural reasons may have prevented the opening [Ackerknecht a.o., 1988].

building components as machines can now produce exactly what is wanted also in small quantities [Smithson, 1973].

In the 1980's a renewed interest in the use of local/traditional building materials in construction occurred [Dethier, 1982]. The application of local materials, by Fathy described as "earth architecture", contributed to the spread of the idea of specific local identities [Fathy, 1973].

### 3) Accessibility mainly based on vehicular movement

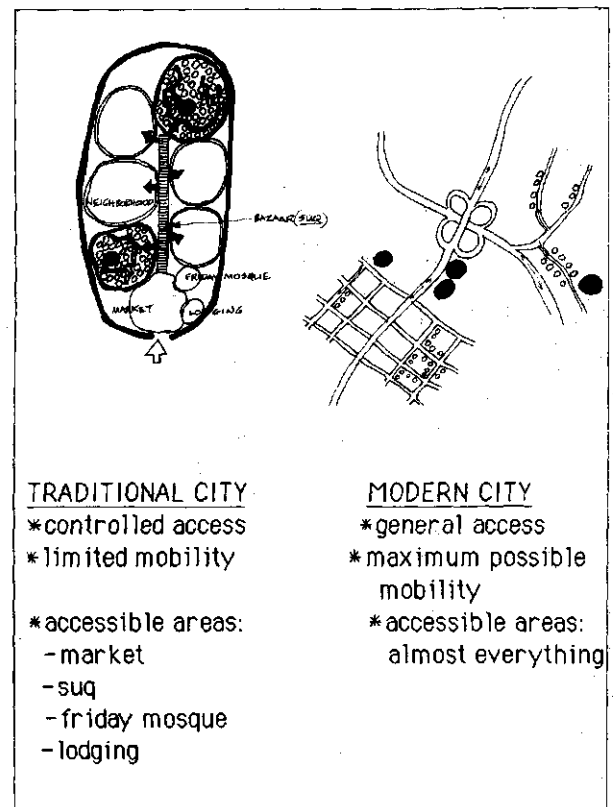
If the traditional concepts are compared with the modern ones there seems to be a major change in the systems of access [figure 2.69].

**FIG. 2.68** Plan and aerial photograph Hail Al-Huwaylat district in Jubail, Saudi Arabia. For the spatial organization of the district a concept seems to be applied characterized by:

- A strong functional zoning. Roads are used to define the boundaries of the different functions.
- Open spaces which are exposed to the harsh climatic conditions such as strong winds, dust blow, solar radiation and high temperatures.
- Semi-private areas such as cul-de sacs and common backyards which are almost directly open to the public.
- No visual spatial hierarchy in open spaces.

All open spaces seem to be related to the dimensions of a two way street. The open space structure does not provide for an integration of open spaces with the design of the individual buildings based on social-religious considerations.

The ignorance of climatical circumstances, the lack of a clear spatially defined open space hierarchy to indicate the social-religious structure, and the strong functional zoning might lead to the conclusion that the settlement pattern is based on imposed western design [U.S.A.] standards [Ackerknecht a.o., 1988].



**FIG. 2.69** Comparison of traditional and modern cities [Rapoport, 1977].

The original types of access governed and indicated the character and use of a space such as, housing, commercial, private, semi-public and public. The character of the access suggested the type of use. For example, an easily accessible main street might indicate commercial use, and a hidden entrance, residential use. Patterns of access also may determine the further development of the area. It could stop growth, maximizing interchange between people, maximizing calmness, and so on. The systems of access have radically been changed since the introduction of the car. With exception of some old city cores, such as in Jeddah [Saudi Arabia] and Cairo [Egypt], most access systems are completely subordinated to car driving [Rapoport, 1977].

Dimensions of open space seem mostly related to vehicular activity [figure 2.70 and 2.71]. In conclusion it might be stated that contemporary open space systems in urban areas in the Middle East are mainly based on maximizing vehicular movement.

One of the main effects of this process is the decrease of real human interaction or social intercourse<sup>83</sup> possibilities [Rapoport, 1969 and Norberg-schultz, 1971]. The increasing vehicular mobility has exceeded

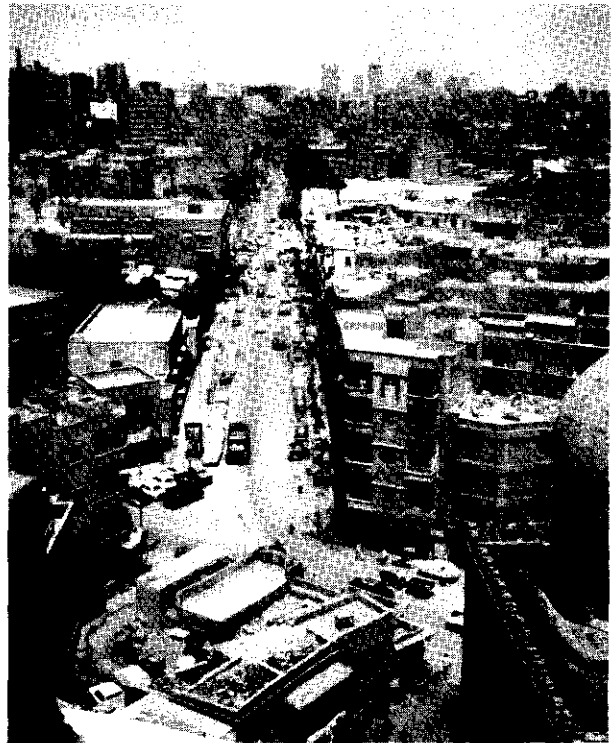


FIG. 2.70 Cairo, Egypt. Breakthrough in the old city, providing easy access to the the different neighborhoods. Walkways for pedestrians are minimized.



FIG. 2.71 Jeddah, Saudi Arabia. Main road, built in early seventieth, giving access to the harbour residential and commercial district. Road and adjacent walkways are almost completely exposed to the sun causing inconvenience to pedestrians.

<sup>83</sup> Social intercourse is a basic need for man [Rapoport, 1969]. In the traditional settlements open spaces essential for public social intercourse were: courtyards in mosques, wekalas, funduks and madrassas [pages 58-60], suqs [page 61], and public squares [page 63]. Social intercourse mainly took place between males [page 24, note 19]. Private family meeting places were courtyards of dwelling units [page 58 and page 83, figure 3.4].

the traditional integration possibilities tied to the traditional urban structure. The concern expressed by writers as Alexander, Piaget and Norberg-Schultz that a mobile world will lead to the disappearance of real human interaction and make man live an egocentric life theoretically does not apply to the Islamic world [Schindler, 1988], as Islam is based on encouragement of good relations within and outside the [extended] family<sup>84</sup> and forbids selfishness<sup>85</sup>. Since also in the countries under study the trend to have a car exists, the danger of the decrease of human interaction always occurs.

In this context the needs of the disabled should also be mentioned. Due to the emphasize on vehicular accessibility often insurmountable barriers occur, such as high curbs along roads, steep staircases to pedestrian bridges which cross roads, and trees, utilities and traffic signs often blocking footpaths<sup>86</sup> [see

84] Support for this statement can for example be found in:

Sura IV, Verse 36; it expresses to do good to family, neighbors who are near and neighbors who are strangers, those we do not know or who live away from us or in a different sphere altogether [interpretation by Ali, 1934].

Sura XLVI, Verse 15; it expresses to be kind to parents [interpretation by Ali, 1934].

Sura XLIX, Verse 10; it expresses that "the enforcement of the Muslim Brotherhood is the greatest social ideal of Islam" and "Islam cannot be completely realised until this ideal is achieved" [interpretation by Ali, 1934].

85] For example Sura XLIX, Verse 11, in which selfishness is condemned [Ali, 1934].

86] Information based on observations by the author in Saudi Arabia [1984-1987] and Egypt [1988] and by Hamilton in Al-Khobar, Saudi Arabia [Hamilton, 1987].

figure 1.5 and 1.6, page 3], social integration of physically handicapped people outside the family seems almost impossible<sup>87</sup>.

#### 4) Grid land sub-division

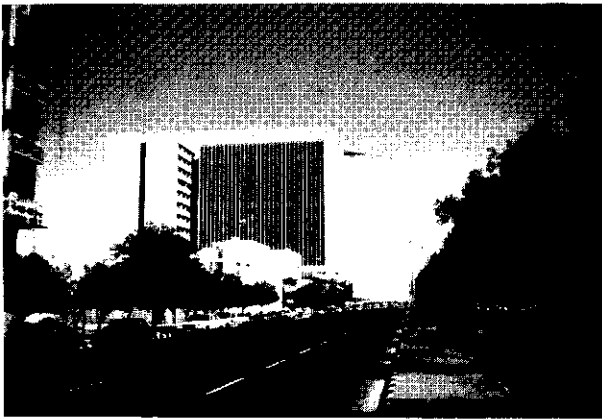
The modern concepts applied in the Middle East, from the beginning of the twentieth century onwards, show an increasing tendency towards geometrization expressed in the use of grid patterns in open space designs. This tendency might be explained by the need for more precision of form and structure which was missing, according to many westerners and native people educated in the west, in most of the traditional settlements. From a visual point of view this might be correct. However, the social organizational aspects [e.g. users responsibility and privacy] carefully embedded in the hierarchy of the traditional open space structure are neglected

87] From an Islamic point of view, however, special interest of designers for these needs might be expected as, according to the Koran, attention has to be given to the weaker members of the society. This statement is derived from:

Surah VI, Verse 152. We have to deal justly and rightly with others; we are apt to think too much of ourselves and forget others: "Thus doth He commands, that ye may remember" [partly interpretation of Ali, 1934].

Surah XVI, Verse 42. This Surah stresses, among other things, the importance of doing good deeds and fulfilling the claims of those whose claims are recognized in social life [Partly interpretation of Ali, 1934].

Surah XLII, Verse 38. This Surah stresses, among other things, helping 'weaker brethren' and not abandoning responsibilities in public life [partly interpretation of Ali, 1934].



**FIG. 2.74** Isolated high-rise apartment building in Al-Khobar, Saudi Arabia.

Street activities related to the dwelling function, such as childrens play, sitting and meeting in front of the house are no longer possible. This undermines the social role of the street.

force of past forms based on Islamic and regional traditions are almost gone. The link with the past is also often unrecognizable as time-space characteristics, originally expressed in for example the building configurations of urban cores, are removed and replaced by new, often western, design conceptions. The "past" seems radically reshaped by the West, and the traditional form-language of open space, as described in paragraph 2.2.1 [Traditional Concepts], seems to be rendered out of date by the recent developments. Responsiveness to social-religious traditions and natural factors seems to decrease in less functional and meaningful<sup>91</sup> urban environments.

In the Middle East, however, a renewed attention for Islamic values, such as social-ethical religious traditions, is developing [Waardenburg, 1987 and Montgomery Watt,

<sup>91</sup>] For the description of meaningful see page 9, note 7.

1987]. In the context of this Islamic revival attention also should be given to a search for design conditions which can match the Islamic ideals and which at the same time respond to the current Islamic life style<sup>92</sup> [Aga Khan Award for Architecture proceedings, 1978-1986]. This search should focus on the development of a contemporary form-language of open space design in which the Islamic ideals are expressed in both use [based on social structure] and physical structure of open space.

Furthermore a contemporary Islamic form-language of open space design might contribute to recognize what an open space is and how it is to be used [Smithson, 1973].

In the next chapter the use people make of their environment and the meaning people attach to it are analysed and discussed. This as part of our search for a contemporary form-language. □

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<sup>92</sup>] The renewed interest in Islamic values is indicated by many authors. Two examples are:

A) "The present seems a period of transition, a period in which traditional heritage is being rediscovered, new experiments are being made to combine modern design methods with cultural continuity in both richer and poorer countries, and there is an urgent search for socially responsive forms" [Aga Khan, 1983].

B) The going back to the sources of the Islamic religion can be observed in many countries and can be considered a spontaneous reaction on the confusing social changes caused by western influences. All kinds of movements refer presently directly to the Koran. In this respect we can talk of the revival of the Islam as religion [Montgomery Watt, 1987 and Waardenburg, 1987].

## TAKING THE PHYSICAL ENVIRONMENT INTO POSSESSION

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Until now this study has dealt with factors and designed environments which had and still have, an effect on the use people make of their environment and on the physical manifestation of open space. These factors and applied design concepts result in built environments, including open spaces, which form physical and spatial conditions in which users needs, both functional and spiritual, can be satisfied. The use people make of their environment and their emotional reflection on it can be considered as a process of taking the physical environment into possession [Van Leeuwen, 1980]. An insight in the background of this process is essential, since the central theme of my design approach of open space is how to create conditions for the process of "living". "Living" in this context is meant in the sense of "dwelling" and defined as follows:

*"To live or dwell is residing more or less permanently in a place [habitat] from where the world outside can be explored and experienced and where one can always come home to. Home in this context is not only the house, but the whole environment, the street, the shops including people like neighbors, etc."*<sup>1</sup> [Van Leeuwen, 1987].

1] Van Leeuwen's definition describes a fundamental dialectic process in which home coming and leaving is not primarily related to home in the sense of 'house' but to a wider environment. He uses therefore the word

People's identification with the environment is based on the meaning people attach to it. The following three factors seem to play a main role in man's identification with the environment: use, historical continuity and the existence of symbolic aspects which characterize every day's life [Kuban, September 1978 and Van Leeuwen, 1987]. In this way the meaning people attach to their environment is linked with economics and politics since both are main forces in shaping activities and life of today's societies [see also paragraph 2.1.2 and 2.1.3]. In order to elaborate on the notion of taking the physical environment into possession, which is dealt with in paragraph 3.3, an understanding of meaning of open space for people is essential.

### 3.1 MEANING OF OPEN SPACE

The design approach of the notion 'meaning' given here, is not meant to review all theories about meaning but to describe how, from a design point of view, meaning of open space is 'place' [habitat] [Van Leeuwen, 1984]. His approach seems more in accordance with the reality as people seem to identify home not only with the contours of their house but also with their environment [Pennartz, 1989]. It is therefore argued that theories which stress home, in the sense of house, as point of departure and return for man are less useful to describe 'taking the physical environment into possession'. An example of such a theory is for example given by Norberg-Schultz: "he needs a home [meant in the sense of house] which designates his point of departure and return. Around this center his world is organized as a system of ways which gradually dissolve in the distance" [Norberg-Schultz, 1969].



achieved and how form and function interact in this process.

Van Mourik stated in 1984:

"living asks among other things for a physical-spatial experience in which usefulness and meaning appear to full advantage. The wholeness in which these qualities are recognizable is of great social importance".

He adds that in our contemporary mobile and compact societies both mentioned qualities of the built environment have to be recognizable, not only in residential quarters but also in wider areas [Van Mourik, 1984]. Conforming to the line of approach in this thesis, the exploration of the meaning of open spaces will focus on the relationship between the concepts of function and meaning. Design, in this context, is strictly defined as a craft, and it usually indicates the skilfulness of the designer to unite functional aspects and intended meaning in an optimal way. With intended meaning is meant interpretations or ideas people attach to physical spatial elements applied by the designer of which association is predetermined by him<sup>2</sup>. Meaning is generally determined by one's culture. For example a mosque or church will be recognized as such as the observer has learned, by cultural experience, to recognize the signals by which these buildings can be determined. For example, signals might be minaret [figure 3.1], church bell-tower and cross.

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2] Intended meaning belongs to the so called 'signifieds' [contents of signifiers], which is explained later on in this chapter [page 87].

Another important factor to be considered is that open space manifestations reflect social and economic relationships arising from within the socio-political character of the communities, which are determined by cultural [religious] conditions and shaped by technical skills as well as economic circumstances and/or considerations<sup>3</sup> [Arkoun, 1982] [see figure 3.2]. In relation to this it I would argue that the general character of an open space performance is determined by aspects of cultural symbolism, based on cultural considerations [expressing religious rules, wealth of the society and so on]. Examples are Al-Fina<sup>4</sup> [figure 3.3], courtyard [figure 3.4], cul-de sac, streets, public buildings and squares, places for prayer and trade [suqs and markets] [figure 3.5] and gardens or parks [figure 3.6].

The meaning of physical environments, including open space, can be considered as emotional reflections on the

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3] Economic considerations are, however, by no means as predictable as physical ones [Broadbent, 1983]. As an example, the unpredictability of economics is expressed by the changes in oil prices between 1972 and 1988. Economic circumstances depend further- more on human judgement which is for example often a factor from which tensions arise between the Islamic Arabic client and the Western consultant, focusing on 'how to conduct economic affairs'. Further tensions can originate due to different opinions of decision makers [authorities] and people who are affected by those decisions, such as users.

4] Al-Fina is an occupied area adjacent to a property, but outside the property itself and used by the owner of this property [oral definition by Dogan Kuban, 1988].

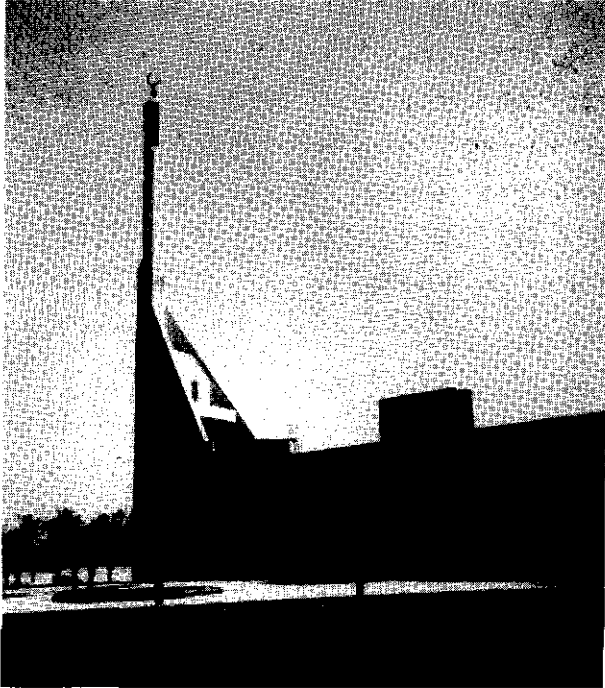


FIG. 3.1 Minaret in Hail Al-Huwaylat at Jubail, Saudi Arabia.

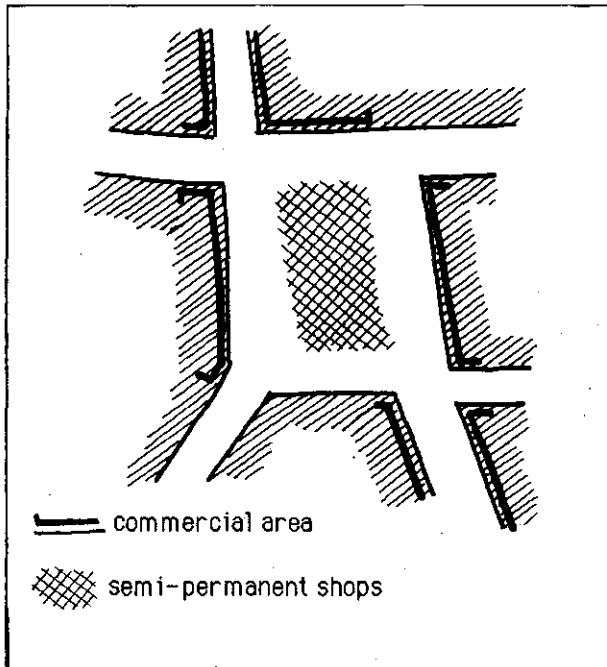


FIG. 3.2 Part of central commercial area in Luxor [Egypt]. The original open space formed by intersections of streets is filled in with semi-permanent shops to achieve an extension of the commercial area. Economic considerations seem to be the main force for these adaptive changes.



FIG. 3.3 Al-Fina in Khobar, Saudi Arabia. The design of the pavement and the use of trees express the wealth of the owner who uses the place as an extension of his entrance area.

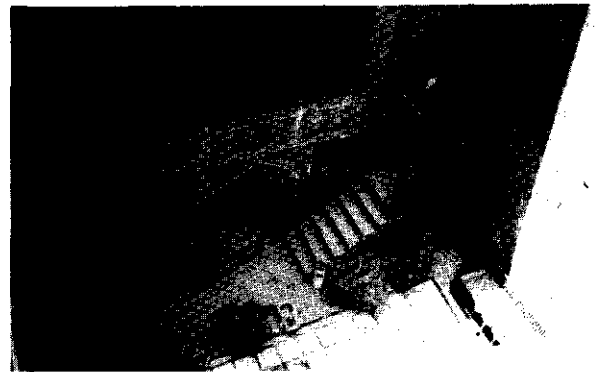


FIG. 3.4 Courtyard in the Anderson house in Cairo, Egypt. Design is determined by family activities which require private space.



FIG. 3.5 Suq area in Cairo, Egypt. Trading activities are separated in various trades and crafts according to traditional organization principles from the medieval Arab-Muslim city [Weiss and Green, 1987]. The suq brings, furthermore, people together in active commercial and social exchange activities. To achieve this any superfluous intermediary is eliminated [Burckhart, 1976].



FIG. 3.6 Painting "Picnic after the Rain", Saudi Arabia, by Malin Basil, 1977. Saudi families are sitting in separated groups in this way creating a private space for each family.

aesthetical, ethical and symbolic universe in which the imaginative life of communities organizes and asserts itself [Van Mourik, 1984 and Arkoun, 1982]. Emotional reflections occur when this universe is deciphered ['read'], by means of signals. This implies that for 'reading' open spaces it is necessary that these spaces have codes and signs [each with its own meaning], which are perceivable by observers/users. As all open spaces have signs<sup>5</sup>, to observers or users, an insight how they accomplish this may help designers to design better open spaces. Designers produce works existing of structural arrangements of physical/material

5) Signs in this context are considered features which both guide behaviour and evoke feelings and/or influence thoughts [Rapoport, 1982]. There is no distinction made between symbols [influence thoughts] and signs [guide behaviour and evoke feelings] since according to Rapoport "everything in semiotics becomes a sign" [Rapoport, 1982].

elements which might be considered systems of meaning [Arkoun, 1983]. In this respect a similarity between language [literature] and design can be assumed.

An examination of the three semiotic dimensions of Morris<sup>6</sup>: pragmatics, semantics and syntactics, all elements of linguistics<sup>7</sup>, may provide the context for an understanding of the functioning of signs.

In the next paragraph the three semiotic dimensions of Morris are adapted to open space configurations in human settlements.

### Semiotic dimensions and open space

The following description of the different semiotic dimensions are based on practical use by designers. The chosen descriptions are directly applicable in analyses which focus on 'reading' open spaces.

6) Morris uses levels instead of dimensions. As, however, no hierarchy is involved, 'dimensions' is preferable [Gandelonas and Morton, 1980].

7) The Theory of Signs by Morris based on the work of Ferdinand de Saussure [Course in General Linguistics, 1906-1911], Charles Sanders Pierce [The Collected Papers of Charles Sanders Pierce, 1860-1908] and Charles Morris, disciple of Pierce [Foundations of the Theory of Signs, 1938] is used.

Pierce and Saussure both wanted to develop a linguistic theory of signification: how an element stands for and/or reminds us of another element. The theory developed is called Semiotics, the science of signs. Morris elaborated on the theory of Pierce and Saussure and divided Semiotics in three related, 'nesting within each other', levels, which seem useful for an understanding of the symbolic values of the open space [Morris, 1938].

### Open space pragmatics<sup>8</sup>

Open space as a sign system, interacts with those who use it.

The Sheikh Hassan neighborhood in Fayyum, Egypt is analyzed to illustrate the interaction of open space and users. It essentially consists of public housing built in the early sixties and gradually extended until 1988<sup>9</sup>. Special attention is given to physical-spatial conditions causing certain uses of open spaces. The original neighborhood consisted of low-rise multi-story buildings built in a grid pattern. The buildings are surrounded by unpaved public areas designed for infrastructural purposes. Private or semi-private open space is missing [figure 3.7]. Since the flats have been occupied many adaptive changes by the inhabitants have occurred. The most significant changes include:

- The relative large public open spaces between the buildings not allocated for special use have been transformed into collective or private gardens [figure 3.8 and 3.9].
- When space has been available semi-private areas of entrances/staircases has been often extended into public areas [figure 3.10].
- Families have extended their living space

8] PRAGMATIC: "Deals with the origins, uses [by those who actually make them] and the effects of signs [on those who interpret them] within the [total range of] behaviour in which they occur" [Morris, 1938]. The dimension includes the basic study of signs.

9] The source for this analysis is material gathered by Niek Veraart for his master thesis "Fayyum City: Development under Constraints", partly supervised by the author [Veraart, 1988].

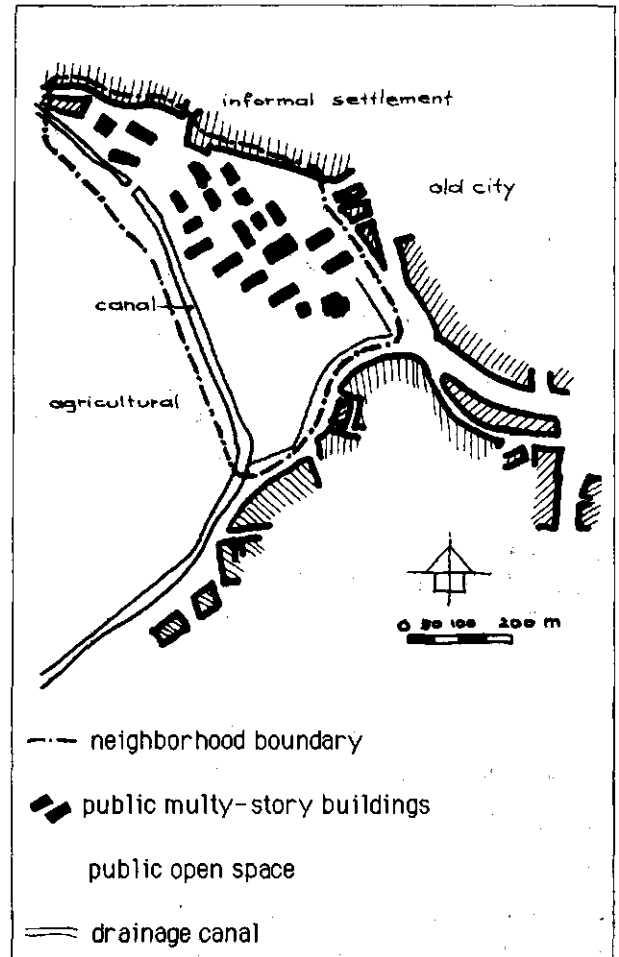


FIG. 3.7 Plan of Sheikh Hassan neighborhood in Fayyum, Egypt [Veraart, 1988].



FIG. 3.8 Collective gardens developed in the public open space of Sheikh Hassan neighborhood. The garden does not interfere with infrastructural purposes of the space [photo Veraart, 1988].

on the flat roofs of their buildings [figure 3.11].

- Slums, consisting of hovels, have been built along the main drainage canal since all open space was not needed for infrastructural purposes, and because of the availability of water [figure 3.12]. These hovels are inhabited by homeless people who are expected to move into new public apartment buildings in Sheikh Hassan, currently under construction. However, their legal rights to move into these new flats remain as yet unclear [Veraart, 1988].

- Building corners are used for trade activities [figure 3.13].

To summarize, the physical plan layout of these flat roofed, concrete, multi-story buildings with wide open public spaces and a main drainage canal provided the conditions for necessary adaptive changes in the original layout by the user residents. It is suggested that such conditions can be described in terms of sign systems.



FIG. 3.10 Extension of semi-private area in public open space in Sheikh Hassan neighborhood. Jute fencing is used to block views from the outside world [photo Veraart, 1988].

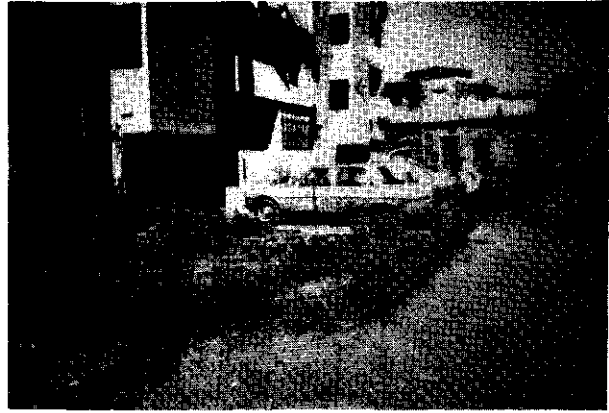


FIG. 3.9 Private gardens developed in the public open space, adjacent to the dwelling units, in Sheikh Hassan neighborhood [photo Veraart, 1988].



FIG. 3.11 Accessible flat roof tops in Sheikh Hassan neighborhood; used to extend dwellings [photo Veraart, 1988]



FIG. 3.12 Informal dwelling units along drainage canal in Sheikh Hassan neighborhood [photo Veraart, 1988]

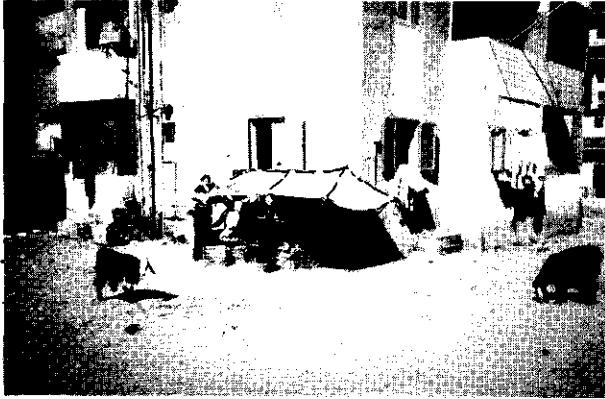


FIG. 3.13 Street corner in Sheikh Hassan neighborhood, used for selling fruits [photo Veraart, 1988].

### Open space semantics<sup>10</sup>

Saussure's basic concept of a sign theory [Saussure, 1906-1911] was anticipated by the Roman architect Vitruvius [Broadbent, 1983] who expressed in a clear way the semantic concept:

".... in all matters, but particularly in architecture, there are those two points: the thing signified and that which gives significance. That which is signified is the subject of which we may be speaking; and that which gives it significance is a demonstration of scientific principles" [translation by Broadbent, 1983].

As applied to open spaces it means that each open space unit or open space network consists of a signifier [sign or indication] and a

<sup>10</sup> SEMANTIC: "Deals with the signification of signs in all modes of signifying that is, with the ways in which they actually 'carry' meanings" [Morris, 1938].

The dimension includes the study of connotative meanings in language, meanings which go along or are suggested with or in addition to the exact or explicit meaning [Merriam-Webster, 1974]. The study focuses on practical intelligibility.

signified [concept or idea], united by social [unspoken] rules or mutual understanding often resulting in name-giving [Broadbent, 1983]. This approach connects with the approach developed by Jencks who uses 'content codes' instead of 'signifieds' and 'expressive codes' instead of 'signifiers' [Broadbent, Bunt and Jencks, 1980]. Ardalan refers in the Islamic context to respectively 'ruh' [contained or spirit] and 'jism' [container] [Ardalan a.o., 1973].

The signifier, with a range of expressive codes, is a material representation, as for example form of boundaries [i.e. facades of adjacent buildings] and the physical layout of the space<sup>11</sup>.

The signified, with a range of content codes, consists of the concept or idea to which the open space refers, as for example religious [Musalla] or social functions [Batha, Al-Fina, etc.]<sup>12</sup>. Figures 3.14 and 3.15 illustrate examples of signifier and signified, and show how signs carry meanings.

The name-giving is generally determined by regional and cultural circumstances. For example in all Arab-Muslim countries in the Middle East the word Musalla indicates an open area for prayer, an open air mesjid.

<sup>11</sup> According to Jencks, expressive or content codes are also: iconography, intended meanings, architectural ideas, space concepts, functions, activities, ways of life, commercial goals, technical systems [Broadbent a.o., 1980].

<sup>12</sup> Content or expressive codes are in the opinion of Jencks: forms, space, surface, properties, volume, rythm, color, texture [Broadbent a.o., 1980].



FIG. 3.14 Fayyum, Egypt. The low wall made of loose stones [signifier] on the right indicates the private area [signified] of the house adjacent to it [photo Veraart, 1988].

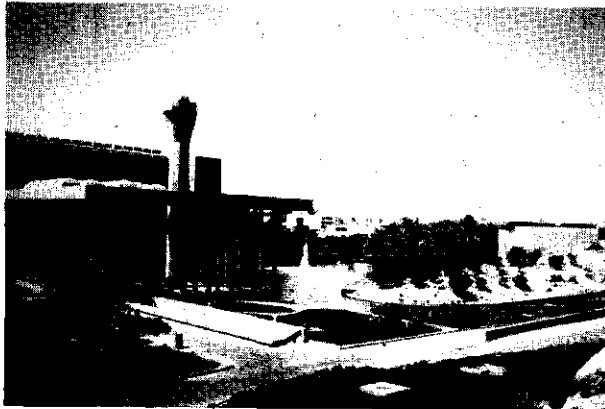


FIG. 3.15 Mosque King Fahd University of Petroleum and Minerals, Dahrn, Saudi Arabia. The minaret [signifier] symbolizes the Muslim religion [signified].

### Open space syntactics<sup>13</sup>

The syntax of open space is related to the way structures of sign systems are composed, such

<sup>13</sup> SYNTAX: "Deals with the combination of signs [such as the ways in which words are put together to form sentences] without regard to their specific significations [meanings] or their relations to the behaviour in which they occur thus ignoring the effects those meanings have on those who interpret them" [Morris, 1938].

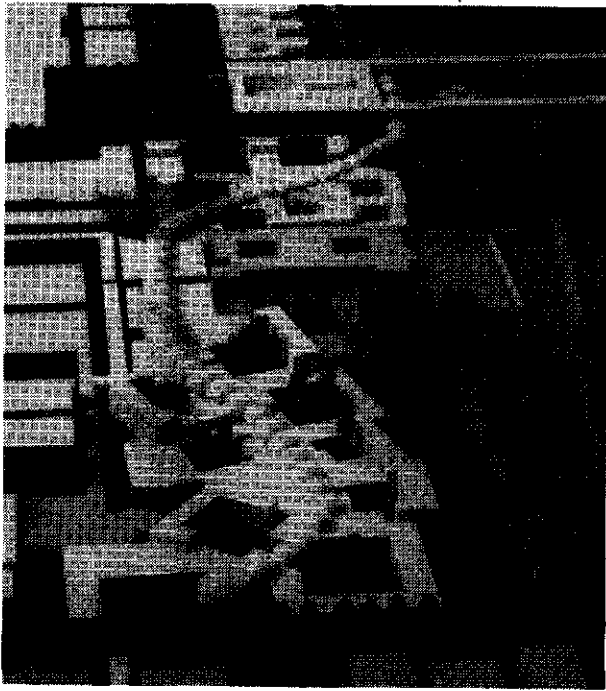
The dimension includes the study of syntax: actual structure of sign systems.

as the ways in which words are grouped together to form sentences. The words have a relationship to each other. Similarly the geometrical and organic relationships between open spaces in Islamic cities, formed by al-finas, cul-de-sacs, streets, squares, etc., create the actual structure of signs. An example of such a structure of signs is given in figure 3.16.

### Meaning of open space determined by form and function

Central question when dealing with meaning and open space is: what originates meaning of open space? Hofstadter states that symbols are determined by "style" or "form"<sup>14</sup> and that the meaning of symbols, which he describes as 'symbolic values' is determined by the content man ascribes to symbols. He adds to this that symbols should be considered as networks consisting of sub-symbols which activate each other. Also as one sub-symbol is understood other related sub-symbols are recognized and herewith the meaning of the symbol. Sub-symbols, are in his opinion, also systems and can be defined as: constellations of symbols which can be separately activated, controlled by the sub-system itself. Sub-symbols form central elements in deriving the meaning of symbol networks and should therefore be absolute and collective elements of reference for a community or society, based on cultural considerations. Absolute and collective elements are, however, generally not universal as regional cultural differences might lead to differences in perception and

<sup>14</sup> Hofstadter means with form the external appearance of elements.



model

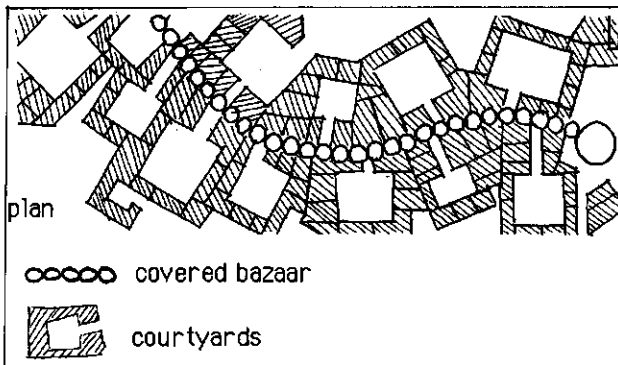


FIG. 3.16 Plan for covered bazaar area of Madinat Zayed in Abu Dhabi by URPAC [URPAC, 1982]. The linear covered bazaar forms the main shopping street. the street is not primarily made to facilitate transport but to proliferate points of contact between merchants, craftsmen and clients. The open space structure of the area can be described as follows. The continuity of the space is expressed by a continuous line of shops, stores, workshops, etc., all closely knit to the main open space formed by the covered street. The covered bazaar also links together a series of courtyards with specific commercial functions, thereby ensuring the continuity of the covered bazaar along with the identity of each courtyard. The courtyards are probably derived from the historical khan concept<sup>15</sup>.

coherent meaning interpretations [Hofstadter, 1988]. 'Symbol' used by Hofstadter is, in this researcher's opinion, equivalent to 'sign' used by Morris as both are carriers of meaning. Based on this assumption and analysis of previous examples it can be stated that meaning of open space originates from functions<sup>16</sup> which observers or users ascribe to:

- A) Form [external appearance] of physical/material elements which determine open space [pragmatic quality] and
- B) Open space relationships [structure] within the open space configuration [syntactic quality].

The content people ascribe to A and B is considered a semantic quality.

Meaning of open space is, as mentioned before, a result of an identification process by observer or user. The identification is determined by a person's experience, knowledge and conceptions [ideas], in general all strongly influenced by his culture.

Physical/material elements which determine the meaning of open spaces, or part of open spaces can carry their particular meaning in

15] Commercial khans were used for distribution of primary craft material and basic products. "They usually took the form of vast courtyards surrounded by porticos, where mounts and beasts of burden can be made ready, with guest rooms on the upper story" [Burckhardt, 1976].

16] Support for this statement is found in Rapoport's book "The Meaning of the Built Environment" in which he states that "meaning is not something apart from function, but is itself a most important aspect of function" [Rapoport, 1982].



principle in three ways. The three categories used are derived from the the classification of signs developed by Pierce [Pierce, 1860-1908] and may help to provide understanding as to how meaning is achieved.

### category 1<sup>17</sup>

*Elements existing in their own right, but at the same time reminding the observer/user of other elements.*

Examples are: sculpture expressing praying hands, indicating the presence of Islam [figure 3.17]; huge coffee pot [dallah] at a traffic intersection in Dammam [Saudi Arabia], expressing the important social function of the coffee ceremony [figure 3.18], and the spiral minaret of Samarra which became a national symbol for Iraq [Madhi, 1983]. Imitations also belong to this category.

Another kind of sign in this category is the likenesses of different open spaces, which depend on some underlying structure, rather than on a visual likeness. Examples may include most of the historical open space units in Islamic cities, which are all based on a pattern of relationships between the use of the open space and the functions of the surrounding buildings and the relationships with the adjacent open space[s]. A likeness between open spaces, as indicated above, is

<sup>17</sup>] Category 1 is derived from Pierce's ICON: "A sign which refers to the object that it denotes by virtue of certain characters of its own and which it possesses just the same, whether any such object actually exists or not" [Pierce, 1860-1908].

illustrated by the figures 3.19 and 3.20 which show respectively thoroughfares in Port Said and Luxor in Egypt. Both thoroughfares show an extension of shop and workshop activities into the street, leaving a central area of it free for traffic purposes. In spite of the visual differences between both open spaces there exists a likeness based on commercial use directly related to shops and workshops in adjacent buildings and the go-through traffic function of both spaces.

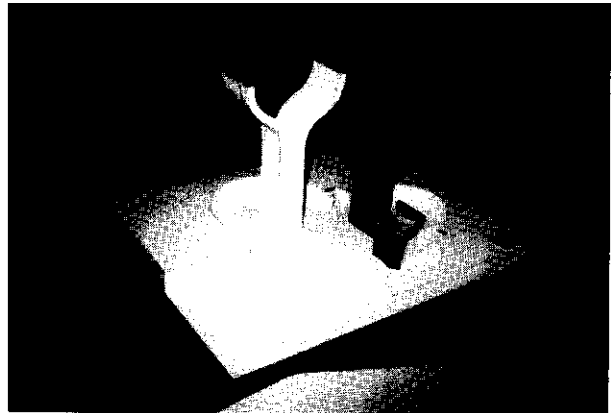


FIG. 3.17 Model for a sculpture expressing praying hands, by a student of King Fahd University of Petroleum and minerals 1987.

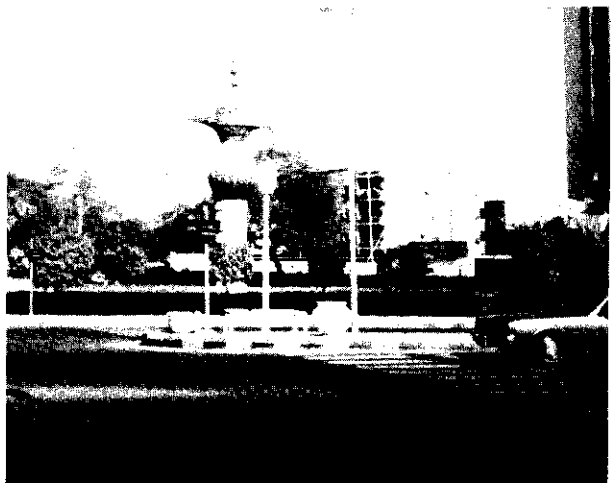


FIG. 3.18 Sculpture of arabic coffee can at a traffic intersection in Dammam, Saudi Arabia.



FIG. 3.19 Thoroughfare in Port Said, Egypt [photo, Weelink, 1983].



FIG. 3.20 Thoroughfare in old Cairo, Egypt.

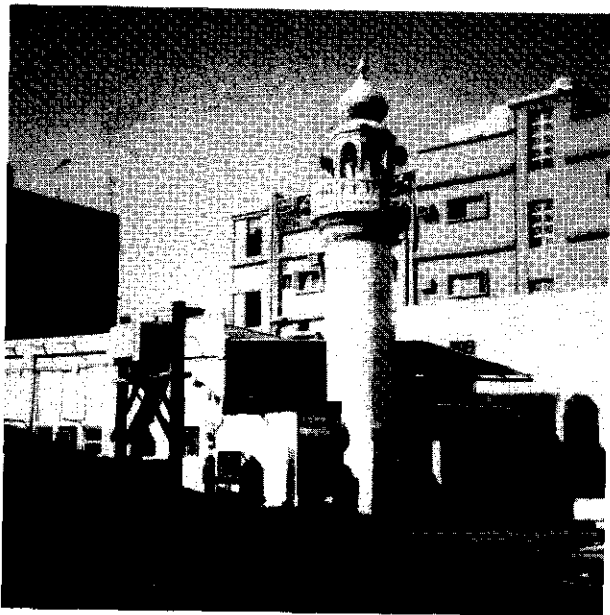


FIG. 3.21 Mosque Dammam, Saudi Arabia. What the photo does not express is that the mosque is the oldest in Dammam, erected when the settlement was only a fishing community, information which is gained by learning.

## category 2<sup>18</sup>

*The meaning of elements in this category is based on the principle of learning.*

The relationship between the element itself and the entity it symbolises has to be learned, both by the user of the element and others to whom its meaning is important. For example an observer can recognise a mosque from the outside by physical features like a minaret. However, to locate the mosque within a particular culture, time and place depends on

<sup>18</sup> Category 2 is derived from Pierce's SYMBOL: "A sign which refers to the object that it denotes by virtue of law, usually any associations of general ideas, which operates to cause that symbol to be interpreted as referring to that object" Pierce, 1860-1908].

how much the observer has learned about mosques and their context [figure 3.21].

### category 3<sup>19</sup>

*Signs indicating some particular element or circumstance by means of a direct relationship.*

Examples of this category are benches, indicating sitting; weather vane, indicating wind direction; arrows, indicating which way to go, and so on. Such indicators can generally be 'read' by anyone. They are not related to a specific culture. Other indices are culturally bound, for example minaret [pointing upwards, indicating heaven] and qibla<sup>20</sup> [pointing towards Mecca, indicating the place of the Ka'aba, figure 3.22] are both related to the Islamic culture and the Muslim reference frame work and can be considered expressive codes derived from Muslim life.

If one would numerically compare modern and traditional signs, the latter will remain insignificant [oral statement by Kuban, 1989]

<sup>19</sup>] Category 3 is derived from Pierce's INDEX: "A sign or representation which refers to its object not so much because of any similarity of, or analogy with it nor because it is associated with general characters which that object happens to possess, but because it is in dynamic [including spatial] connection, both with the individual object on the one hand and with the senses or memory of the person for whom it acts as a sign" [Pierce, 1860-1908].

<sup>20</sup>] Qibla: the direction of prayer; the wall of a mosque oriented toward Mecca [Hoag, 1977].

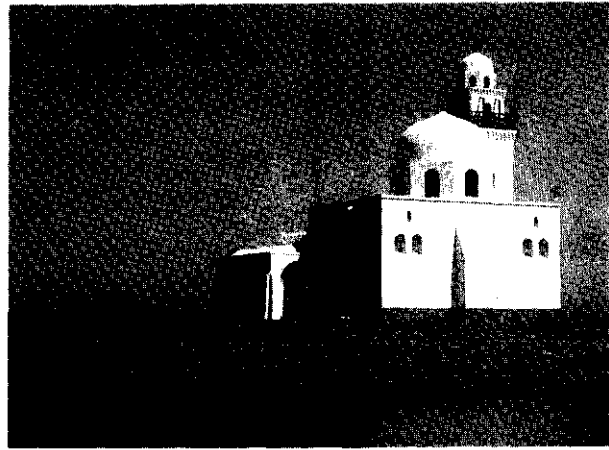


FIG. 3.22 Mosque along corniche in Jeddah, Saudi Arabia. The low addition to the main mosque building right in the front is the qibla, indicating the direction to Mecca.

### 3.2 SIGNS, CONDITIONS FOR USE: A COMPARATIVE STUDY

In the preceding sub-paragraph it is stated that meaning originates from functions which users ascribe to form and open space relationships. In the next pages three neighborhoods in Fayyum [Egypt] are analyzed and compared in regard to the relationship between meaning and use. The main goal of these analyses and comparison is to discover the contribution of meaning to functional and physical aspects of the environment. A brief contemporary neighborhood identification, the originally proposed zoning plan together with conditions which attracted people to adapt their environment, and a contemporary land-use plan together with the concrete adaptive changes<sup>21</sup> are given for each neighborhood.

<sup>21</sup>] The sources for these identification and plans are data gathered by Niek Veraart for his master thesis "Fayyum City: Development under Constraints", partly supervised by the author [Veraart, 1988].

### Sheikh Hassan neighborhood

As is indicated in the paragraph 'open space semantics', signs consisting of wide open spaces between multi-story buildings, accessible flat roofs on top of buildings and drainage canal in the Sheikh Hassan neighborhood form conditions for certain uses, resulting in adaptive changes of the original planned environment. These conditions are strongly related to each other and form an interactive system of signs determining the adaptations by the users. The main adaptive changes in use and their physical conditional causes are indicated in figures 3.23 and 3.24 [see page 94].

#### SITUATION IN 1987:

-It is a public, low-income housing project consisting of multi-story buildings [4-6 stories high], uniformly spread over the area, creating relative large open spaces between buildings.

-The project was mainly built rapidly in the early 1960's; however, a few additional buildings were added in the south during the last twenty years, and some development is still going on.

-The neighborhood is predominantly residential, without substantial economic activities.

-Layout of the neighborhood, design of dwelling units and actual construction were all planned, designed and implemented by the public authorities. Residents were not involved in the design process.

-The number of inhabitants in 1987 was

approximately 2000.

The question arises if in other neighborhood layouts developed under other circumstances, conditions [sign systems] would also exist which determine certain adaptive changes in the environment. In order to make a comparison with Sheikh Hassan, a neighborhood where the design and its implementation are completely controlled by authorities, two other neighborhoods in Fayyum of almost the same size but developed under different circumstances are analyzed: El Ardi, partly planned by central authorities [figures 3.26 upto 3.31] and Hakura, developed without any planning or design regulation issued by authorities [figures 3.32 upto 3.37]. For the location of the neighborhoods see figure 3.25.

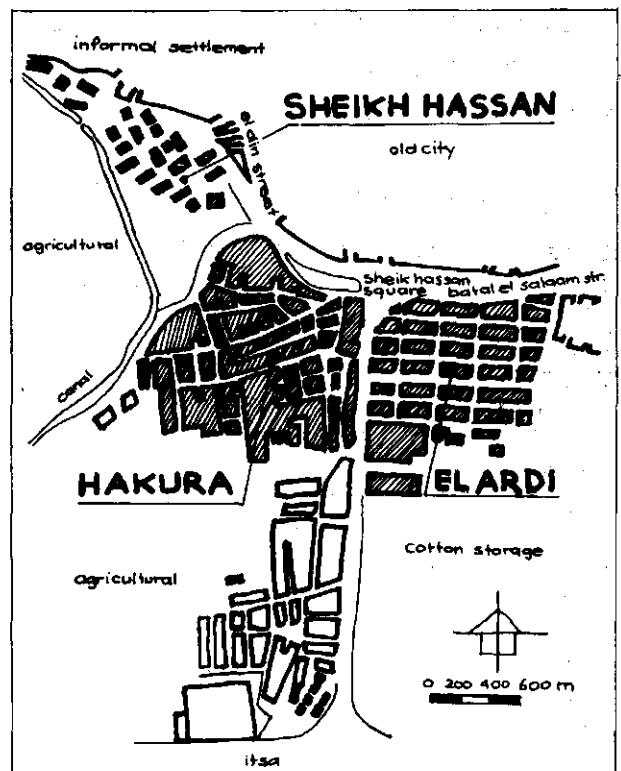


FIG. 3.25 Location of neighborhoods.

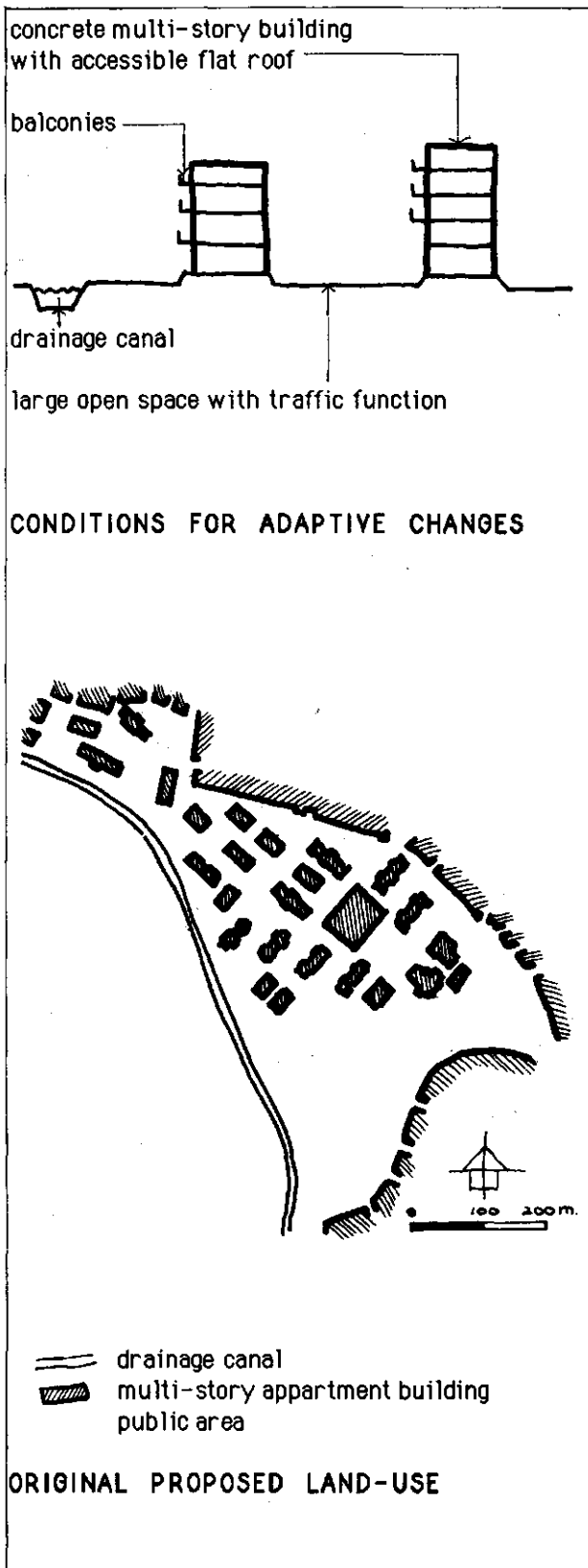


FIG. 3.23 Sheikh Hassan neighborhood, Fayyum, Egypt. Situation in the early '60 [Veraart, 1988].

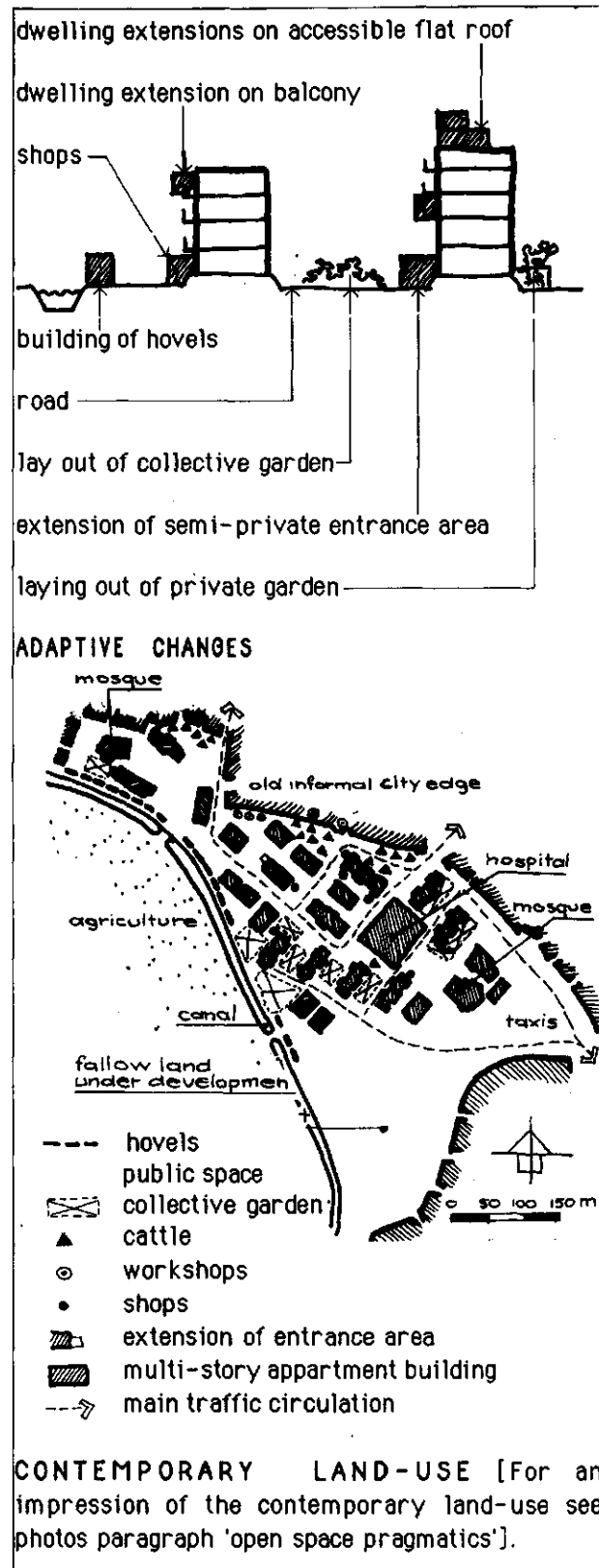


FIG. 3.24 Sheikh Hassan neighborhood, Fayyum, Egypt. Situation 1987 [Veraart, 1988].

### El Ardi neighborhood [fig. 3.26 and 3.27] SITUATION IN 1987:

- It is a low-income neighborhood, planned by the British authorities at the beginning of the twentieth century, according to British planning standards: rectangular blocks of 200 m X 50 m, subdivided into lots of 20m X 5m or less.
- It was mainly built between 1922 and the 1950's.
- It is a residential area with rural [animal husbandry] and urban activities [workshops, shops, etc.], consisting of row houses constructed back to back.
- The housing stock consists of the traditional [farm] houses, incremental one-family houses and multi-family walk-up apartment buildings [figure 3.28].
- Until 1952 residents were allowed to construct their houses within the grid-pattern in accordance to their own needs and means, without interference on the part of authorities. After 1952 the area was developed in accordance with Egyptian building standards.
- The number of inhabitants in 1987 was approximately 3000.

A survey of contemporary land-use leads to the conclusion that in Al Ardi buildings acted as conditions for adaptive changes. It should, however, be noted that due to the grid the open space structure lacks a clear traffic hierarchy [all streets have almost the same width] causing conflicts between contemporary traffic functions and urban activities such as shops, workshops, etc, and remnants of rural life style such as animal husbandry.

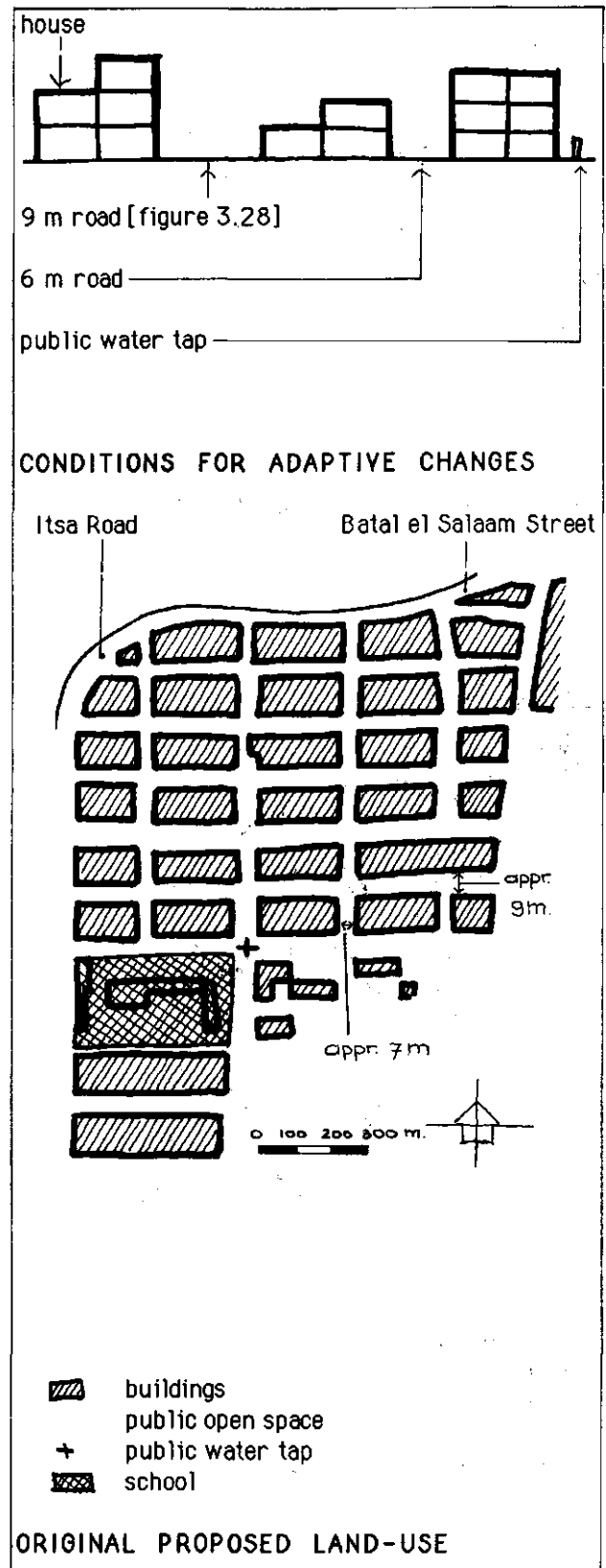
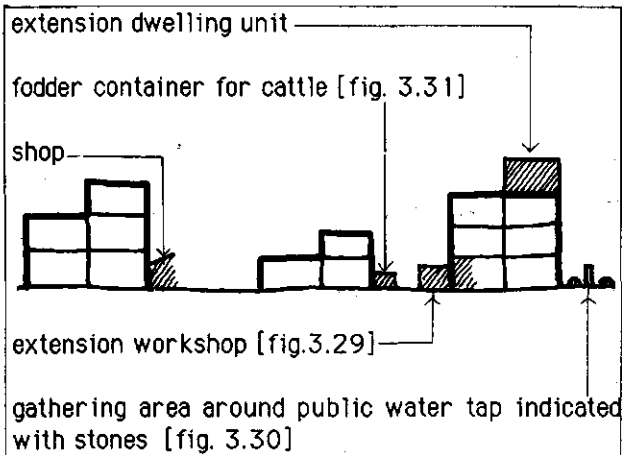
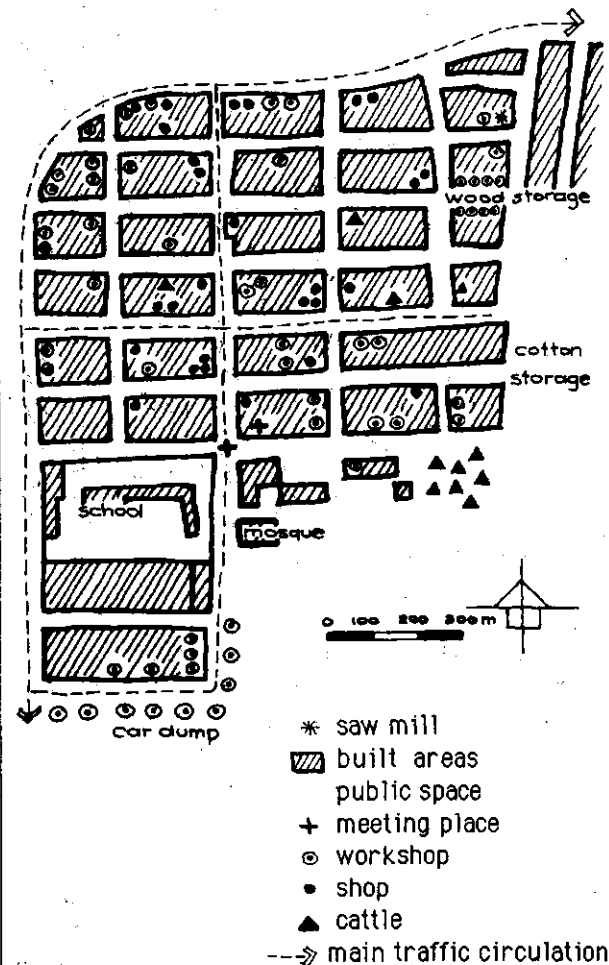


FIG. 3.26 El Ardi neighborhood, Fayyum, Egypt.  
Original proposed situation [Veraart, 1988].



### ADAPTIVE CHANGES



### CONTEMPORARY LAND-USE

FIG. 3.27 El Ardi neighborhood, Fayyum, Egypt. Situation 1987 [Veraart, 1988].



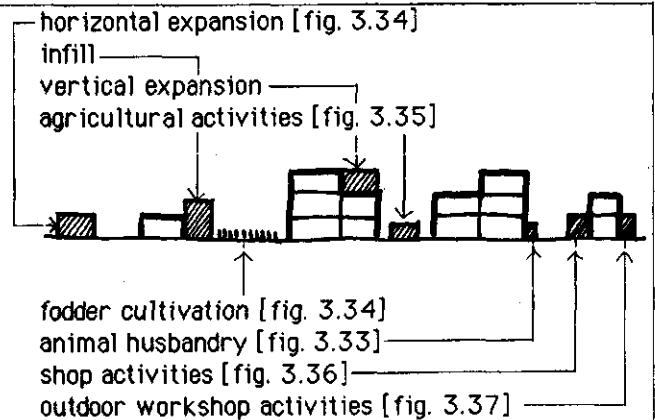
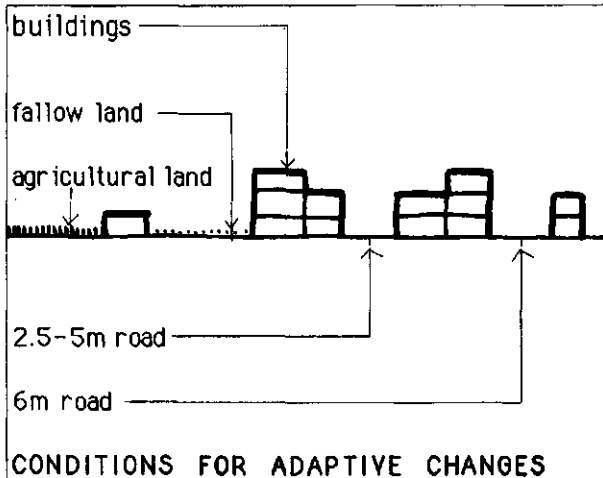
FIG. 3.28 El Ardi neighborhood, Fayyum, Egypt. Typical 9m wide street, illustrating the various building styles in the neighborhood [photo Veraart, 1988].



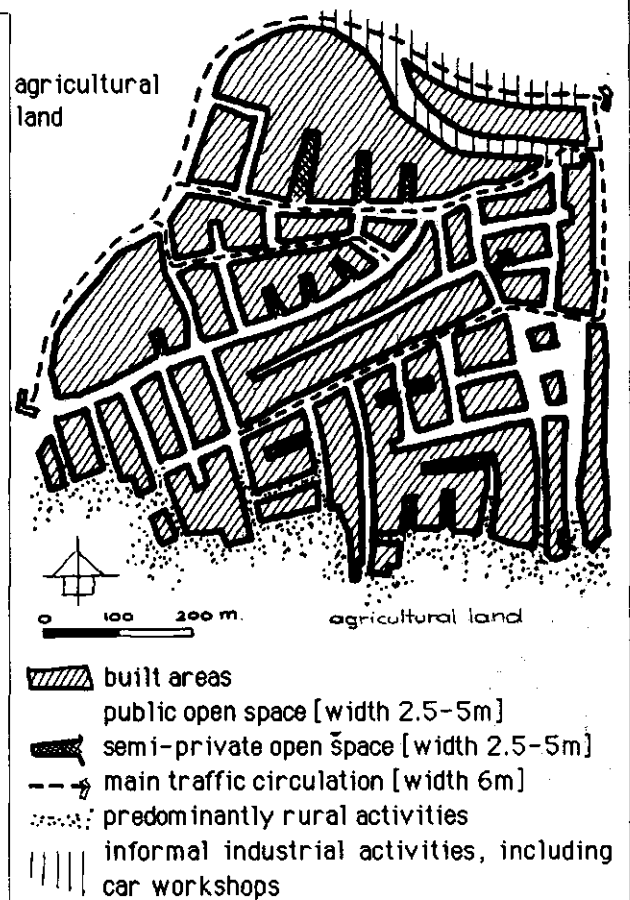
FIG. 3.29 El Ardi neighborhood, Fayyum, Egypt. Houses on the left are changed into workshops as the space in front of the houses was suitable for outdoor workshop activities [photo Veraart, 1988].



FIG. 3.30 El Ardi neighborhood, Fayyum, Egypt. Gathering of women around public water tap [photo Veraart, 1988].



### ADAPTIVE CHANGES



The rest of the neighborhood has dispersed urban activities, such as grocery shops, furniture and tile workshops, predominantly occurring on street corners and along through streets.

### CONTEMPORARY LAND-USE



FIG. 3.31 Al Ardi neighborhood, Fayyum, Egypt. Settler maintains ingredients of a rural life style [photo Veraart, 1988].

FIG. 3.32 Hakura neighborhood, Fayyum, Egypt. Situation 1987 [Veraart, 1988].



For the analysis of the next neighborhood, Hakura, only the contemporary land-use is described as its development took place till 1984 without any land-use plan or design regulations issued by authorities.

### Hakura neighborhood [fig. 3.32, page 97]

#### SITUATION IN 1987:

- It is a very low-income residential area, consisting of irregularly shaped building blocks, with both rural and urban activities, mainly shops and workshops.

- The development of the neighborhood is mainly the result of many individual decisions made by farmers to sell a piece of their land, which was subsequently used for building purposes. Settlers were allowed to construct their houses in accordance to their needs and means. Since 1985 there has been some influence by authorities on new building development on agricultural land.

- It was mainly built between 1970 and 1984, however, [re]development is still going on.

- Housing stock consists of a mixture of mainly illegally built dwelling units. The variety in houses is mainly the result of different development stages of the houses and income differences.

- The number of inhabitants in 1987 was approximately 5000.

As mentioned before, the development process in Hakura was not guided until 1985 by any design or building regulation. The only layout condition was the outline and pattern of



FIG. 3.33 Hakura neighborhood, Fayyum, Egypt. Animal husbandry on fallow land in the south periphery of the neighborhood [photo Veraart, 1988].



FIG. 3.34 Hakura neighborhood, Fayyum, Egypt. Building construction on previous agricultural land [horizontal expansion] and fodder cultivation on fallow land [photo Veraart, 1988].



**FIG. 3.35** Hakura neighborhood, Fayyum, Egypt. Harvest space in front of the house [photo Veraart, 1988].



**FIG. 3.36** hakura neighborhood, Fayyum, Egypt. Fruitstand in and in front of a traditional [rural] house [photo Veraart, 1988].



**FIG. 3.37** Hakura neighborhood, Fayyum, Egypt. Furniture workshop extended into the street [photo Veraart, 1988].

agricultural lands which became available for development when the farmers sold their land. Subsequently built elements acted as conditions [signs] for further developments. They challenged the people to act. This process seems to continue until present days, since adequate control by the authorities still seems to fail, due to a lack of manpower and the odd hours during which adaptive changes are made, mainly at night and on Fridays [day of rest] [Veraart, 1988]. In Hakura conflicts also occur between contemporary traffic functions and the many urban activities which take place in streets. The main cause seems the small dimensions of streets [maximum 6m], which make it impossible to facilitate all functions at the same time.

### **Semantic and syntactic aspects determine pragmatic quality of open space**

A comparison of the results of the land-use analyses of the three neighborhoods in Fayyum leads to the following conclusions:

- The adaptation process seems mainly based on a continuous interaction between the physical environment and users [pragmatic aspect] in which environmental syntactic and semantic qualities play a major rôle. The process focuses on the creation of a continuously useful environment, which responds to the needs of the users. In this sense the contemporary open space use can be seen as a synthesis of both urban and [remnants] of rural activities, achieved by users.

- The development of controls or the lack of it by authorities does not seem to influence physical environmental conditions which determine adaptive changes.

- The form of the physical environment is mainly a semantic aspect, consisting of signifiers and signifieds. It should, however, be noted that the form of open spaces often determine meanings for use which are not directly a part of the object itself and can therefore not completely be defined in advance [unintended meaning]. Examples of objects with an unintended meaning are: building roofs, canal banks and large open spaces in Sheikh Al-Hassan, now in use for building activities.

- The structure and dimensions of open space [syntactic aspect], both designed [Sheikh Al-Hassan and El Ardi] or ad-hoc autonomously

developed [Hakura], seem to be an important condition for the adaptation process. Thoroughfares are mostly kept free from developments which interfere too much with the traffic function. Furthermore they form starting-points for urban activities like for example shops and workshops. Less important streets and cul-de-sacs show more residentially related activities, like the gathering of people, childrens play, development of gardens and infill with dwelling units, both legal or illegal. Subsequently these uses act again as signs for the beholder to indicate the structure of the open space pattern. Based on the preceding conclusions it seems that:

*Semantic and syntactic aspects determine the pragmatic qualities of open space, which consist of continuously adaptive changes by users of the existing physical situation to new needs<sup>22</sup>.*

It should be noted that these conclusions are not only specific for the situation in Fayyum but also valid for other areas of both the Arab-Muslim world in the Middle East<sup>23</sup> and

<sup>22</sup>] As such this conclusion fits the following statement by Morris regarding semiotics and architecture. "Semiotics as a system of signification has three characteristic dimensions: semantic, syntactic, and pragmatic. It is only the first two that are of primary concern to architecture, as shown in the interest in history of architecture and painting concerning architecture and nature like the old Vitruvian concept" [Gandelsonas and Morton, 1980]. Morris suggests that designers should only focus on semantic and syntactic aspects as they determine the pragmatic aspect.

allows technology as such, an integrated element in any developed concept of society, to roam at will, a raging creature devouring the society itself.

*In reference to an article by Kuban in 1983, "Conservation of the Historic Environment for Cultural Survival".*

10) A comprehensive and meaningful design approach of the physical environment should encompass both past and future in which the user takes its proper place.

*Based on the statement: "The future of environmental design for the Arab-Muslim world lies in a new interpretation of the past, and it is essential to link the contemporary design concepts with the traditional concepts"; student at the King Faisal University in Dammam, Saudi Arabia, 1987.*

11) Designs should be adaptive to changes because the urban fabric would quickly deteriorate if they do not correspond to future demands by new populations.

*With reference to an article by Arkoun, in 1983, "Islam, Urbanism, and Human Existence Today".*

12) Design considerations, as discussed in this thesis, might contribute to a contemporary open space development in which users and clients will benefit from modern ideas instead of being hampered by it.

13) Since the design of open space is strongly related to the interpretation of contemporary 'perceivable' needs of users, the necessity of

'good eyes' for both designers and decision-makers should not be under-valued.

*"Was ist das Schwerste von allem?*

*Was dir das Leichtste dunkel.*

*Mit den Augen zu sehen,*

*Was vor den Augen dir liegt" [Goethe].*

*Pieter W. Germeraad*

*Open Space in Human Settlements: the Lesson from the Islamic Tradition*

*Netherlands, Wageningen, 9 january 1990.*

## STATEMENTS

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1) Open space designs in human settlements in the Arab-Muslim region in the Middle East are often unsatisfactory to both users and clients if an insight in design considerations based on Islamic values on the part of designers is missing.

*This thesis*

2) Contemporary open space design should deal with creating conditions for the survival of the Arab-Muslim society, and therefore should be considered a process determined by continuous adaptations of existing situations in conformance with Islamic social/religious traditions, and economic and/or political changes in which usefulness and functionality of the environment seems to prevail above visual experience.

*This thesis*

3) The Islamic lesson in privacy, related to open space design, implies that designs should provide to people the possibility to safeguard the privacy of others.

*This thesis*

4) Since the Islamic culture is characterized by a plurality of sub-cultures, specific physical design models for the design of open space in the Arab-Muslim area of the Middle East as a whole cannot be given.

*This thesis*

5) The physical, built environment

expressing the cultural and religious values of Arab-Muslims has inherent ambiguities. It is definable in social terms but not in specific Islamic forms.

*This thesis*

6) The identity of the urban environment lies mainly in the interaction between setting and man, and not in form. This might be the challenge for contemporary open space design. *In reference to a description by Kuban regarding conservation; "Conservation of the Historical Environment for Cultural Survival"; Aga Khan Award by Aperture, 1983.*

7) Meaning of open space is the users reason for being there. Open spaces must therefore serve for some practical and/or emotional use, and they express behavioural actions based on associational qualities.

*In reference to rapoport's book "public streets for Public Use", 1987.*

8) Open space design should not be based on the assumption that designs in the Islamic world must reproduce certain forms or signs that are identified as being Islamic in order to help to distinguish Islamic culture from western or oriental cultures.

*In reference to an article by Mahdi in 1983, "Islamic Philosophy and the Fine Arts".*

9) Civilization is becoming more and more influenced by technology. The problem, however, is not technological development as such but the domination of an ideology that

many non Arab-Muslim regions elsewhere in the world, as for example the Far East and Africa [Kuban, April 1978, Grabar, 1983 and Schindler, 1988].

### 3.3 THE MEANING OF SIGNS AS A BASIS FOR TAKING THE PHYSICAL ENVIRONMENT INTO POSSESSION

The following general conclusion might be derived from the discussion of meaning in the preceding paragraphs and the description of how the physical environment is taken into possession in the beginning of this chapter:

Open spaces with built elements together must form a coherent<sup>24</sup> physical framework for economic and social activities. This framework both hinders and facilitates these activities, and occasionally promotes them, determines or locates them.

The kernel of the social organisation on which social activities are based is the extended family and especially the role of women within it<sup>25</sup>.

23] Schindler ascertained the influence of former farming occupations of inhabitants on the actual use of urban open space as he was working on the Abu Nusier project near Amman in Jordan [Schindler, 1988].

The trial of the government of Saudi Arabia to settle down the cattle rising nomads as potential future labour force, in view of replacing foreign laborers, leads to adaptations of the urban environment, e.g. building pens by inhabitants [Ackerknecht a.o., 1988 and Al-Jamea, 1985].

24] If open space and adjacent buildings are functional and/or social not coherent, users will try to achieve this by implementing adaptive changes.

The physical framework can be considered as a condition for the survival of society<sup>26</sup>, a process

determined by continuous adaptations of existing situations due to social/religious traditions<sup>27</sup>, and economic and/or political changes in which usefulness and functionality of the environment seems to prevail above visual experience. The aesthetic dimension of the environment seems to be excluded.

Changes in the social and economic structure are often drastic and may cause problems if the adaptability of the frame work appears insufficient. For example, the migration of low-income people from rural to urban areas may cause increasing demands for housing often resulting in development of hovels of a rural character in almost all available open space [figure 3.38]. The often illegal developments generally create an overburdening of the existing infrastructure

25] For the role of women in the extended family see paragraph 2.1.1, sub-paragraph 'Traditions affecting open space design', '2privacy'.

26] As such the physical framework can be considered an existential factor for man.

The physical framework in this context is considered part of what Norberg-Schultz describes as "architectural space", which he describes as the "physical counterpart" of "existential space". Existential space is by Norberg-Schultz described as "one of the psychic structures which form part of man's being in the world" [Norberg-Schultz, 1971].

27] Actions in Arab-Muslim countries are in many cases still based on the Islamic conception of life in which social-religious considerations play a major role.

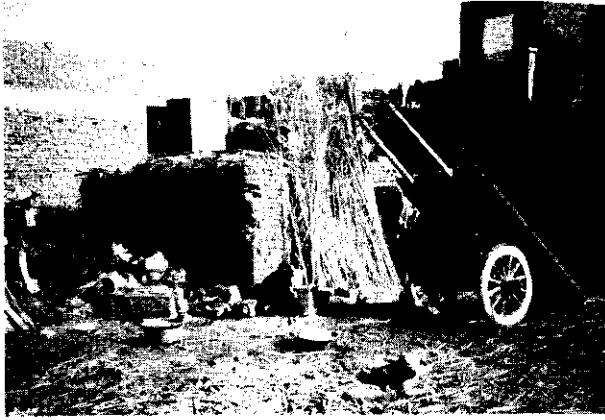


FIG. 3.38 Fayyum, Egypt. Rural hovel built in an open space in an existing neighborhood. The traditional rural life style is continued in the city [photo Veraart, 1988].

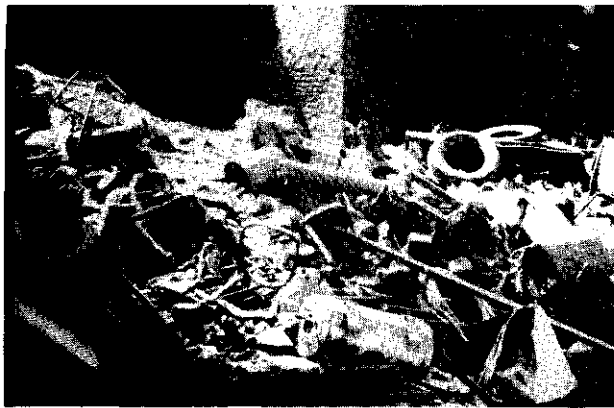


FIG. 3.39 Culmination of waste and dirt in Cairo, Egypt [photo Zuidema, 1989].

[roads, water and drainage systems], culmination of waste and dirt [figure 3.39] and a worsening of quality of houses due to intensive use and bad maintenance. The changes can, on the contrary, also lead to the "richness" we attach to traditional streets. According to Kuban this richness results from the direct interaction between the man-made environment and social meaning. It also gives an insight into peculiarities of former

societies [Kuban, 1978]. Open spaces are conditions for the continuity of the cultural identity as they express in a physical/material and/or functional way the historical process of taking the physical environment into possession [figure 3.40].



FIG. 3.40 Square in the old city of Jeddah, Saudi Arabia, expresses cultural continuity. The square was created by removing part of the old houses in the area. Remaining old dwellings which bound the square and the old gate on it [from under which this photograph is taken] are a remembrance of past periods. Physical design [expressing wealth of the city] and function [gathering] of the square belong to the present. In this way a new synthesis is created which reflects the past and the present.

In conclusion it can be stated that open space use and its appearance result from the explicit living process in which "living" traditions based on present lifestyles, economics and social-religious values such as privacy, play a major role. The present lifestyles may, however, strongly be influenced by former occupations such as farming.

Based on this conclusion it might be stated that open spaces designs for urban environments should not only take into account programmatically derived functions and the Islamic social structure, but should also provide for informal possibilities:

- To start small scale economic activities such as selling goods or agricultural products.
- To continue certain aspects of former life styles, such as agricultural activities.
- To use part of the open space for the extension of dwelling units.
- To adapt the open space surrounding the dwelling unit to individual social-religious needs.

The last aspect might be important since not all Muslims seem to interpretate the Islamic social-religious structure in the same way. According to Arkoun secularisation brought into being two groups of people with different cultures. First, the traditional people related to the traditional religion, following only the Sharia. Second, the modern people who adhere to the Sharia but also accept modern institutions, science, economics and social organisation. It should, however be noted that most Muslims still tend to be dominated by the

traditional culture<sup>28</sup>. The cause of this might be that most people are still unprepared to absorb the more sophisticated material culture produced by the West [Arkoun, 1986]. □

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28] Based on this circumstance the term 'material modernity' is introduced by Arkoun. Material modernity might be described as: acceptance of modern mainly western products, including design concepts, without acquiring the underlying western cultural principles [Arkoun, 1986].



"goodness-and-evil-concept" will perfect man's actions from an ethical, aesthetical and honor point of view [Llewellyn, 1983].

The layout of traditional Arab-Muslim cities at first sight also seems to endorse the determining role of social/religious ordering, since urban physical ordering seems to be based strongly on the conception of life derived from the Koran and the Hadith [Akbar, 1984; Madhi, 1983 and Jairazbhoy, 1964]. These traditions can be summarized as users responsibility, privacy and waqf [see paragraph 2.1.1]. All these indicate that aesthetical qualities of an environment seem mainly to be found in the way social/religious considerations are made manifest, for example by the use people make of their environment and the organization or ordering of public versus private activities. These considerations are part of what Norberg-Schultz describes as 'symbol-milieu'<sup>13</sup> [Norberg-Schultz, 1969].

Environmental aesthetics from a Muslim point of view might therefore be described as:

*The science that deals with the perception of forms and phenomena people know and are able to recognize, based on ordering and social-religious meaning.*

In this description of aesthetics a relation is expressed between the external form, and the precedence over the acquisition of benefits [Llewellyn, 1983].

13] Norberg-Schultz description of symbol-milieu involves more than just aesthetics, but as Islamic aesthetics and ethics seems inseparably connected, symbol-milieu might be used in this context [Norberg-Schultz, 1969]. For more information regarding symbol-milieu see note 8.

human and social content together with the moral-religious endeavour which might be considered essential aspects of the Islamic conception of life [Aga Khan, 1986]. I would furthermore argue that form-aesthetics is the result of the intrinsic attitude of mankind to the Universe, as aesthetical and ethical Islamic form-guidelines in both the Koran and the Hadith are not given.

In order to trace environmental conditions that may lead to aesthetic experiences by observers, the ordering principles of the physical milieu<sup>14</sup> affecting the layout of open spaces in the Islamic world are discussed first.

#### 4.3 ORDERING PRINCIPLES OF THE PHYSICAL MILIEU AFFECTING OPEN SPACE IN MUSLIM COUNTRIES

In this paragraph the various views on traditional environmental urban ordering are discussed. These views vary from the application of geometry as the only ordering principle to the non-existence of any form principle.

According to Vroom form ordering in the physical environment can be achieved by regularity<sup>15</sup>, polarity<sup>16</sup> and balance<sup>17</sup>

14] Physical milieu is in this context meant as supplement of symbol-milieu. As these together create, according to Norberg-Schultz, a meaningful environment [Norberg-Schultz, 1969]. See also note 7.

15] Essential in the search for order seems the inborn need for regularity which makes man seek for regularities also in open space by means of segmentation [Vroom, 1986].

[Vroom, 1986].

According to Ardalan and Bakhtiar the Islamic answer to an ordering of the physical environment based on the above mentioned factors seems to be: geometry<sup>18</sup> [Ardalan a.o., 1973]. In "The Sense of Unity" they state that geometry in open space systems is a clear expression of "a positive space continuity that creates no discontinuity or any obstruction to the flow of passers-by. Man moves continuously in an undulating and expanding space that is for ever united". The use of geometry in open space design creates open space structures which are unspoilt, symmetrical and ordered. The order is "like that of crystalline, particles polarized by a magnet". In the traditional city the magnet is the thoroughfare that gives access to the bazar and the particles are the commercial and religious buildings. The hierarchy of spatial

16] Man seems to order their surrounding physical elements in binary contrasts. Examples in relationship with open space are: left-right, up-down, outside-inside, open-closed, full-empty, symmetrical-asymmetrical, etc. [Vroom, 1986 and Ardalan, 1973].

17] Balance in this context can be described as: a state of distribution of physical elements which determine open space, in which everything has come to a stand still. In a balanced open space composition factors as shape, direction and location of physical elements are mutually determined by each other in such a way that no change seems possible without disturbing the whole [Arnheim, 1969 and Vroom, 1986].

18] Geometry in this context is defined as: "an arrangement of objects or parts that suggest reclinear or simple curvilinear figures or outlines [Merriam-Webster, 1985].

linkages in an geometrical open space structure provides an orderly system that follows the basic traditional pattern of connection [hierarchy of streets], of transition [public towards private] and of culmination [squares in front of mosque or palace] [Ardalan a.o., 1973].

Other authors who consider geometry as a main Islamic physical ordering principle are Jairazbhoy, Sardar and Fathy. Jairazbhoy states that irregularity, which occurs in traditional city layout, has always been alien to Islamic art. This is expressed, for example, in architectural designs that generally show an over-zealous desire for symmetry [Jairazbhoy, 1964].

Sardar expresses that geometry, including symmetry, is an important aesthetical factor of the Islamic environment, since Islamic architecture achieves its level of integration and ultimate sense of unity and purpose not only by meaning, symbol, gravity, energy, water and movement but also by geometry [Sardar, 1985].

Fathy states that geometry was used in Islamic countries as an aesthetic [divine] abstraction, since the barren landscape offered no natural model on which the Muslim could base his imagination. The result was a combination of natural image to which man remained sensitive, and the stylised interlacing of geometry and pattern<sup>19</sup> [Fathy, 1983].

19] Fathy illustrates his statement with the example of a courtyard. The courtyard is closed entirely to nature at the ground level to give protection against heat and glare. The symbolic idea man added was that the four corners of the courtyard would symbolize the four columns carrying the dome of the

The author doubts, however, if geometry might be considered a specific Islamic ordering principle for the development of open space in human settlements.

Grabar for example states that the specific Islamic character of forms is rarely clear or specific enough, except in calligraphy. According to him the physical form of towns is not dictated by the faith or the Islamic overall culture. He derives his opinion from the way in which buildings are constantly repaired and renovated to fit a prevalent taste [Grabar, 1983].

Madhi also seems to doubt a general Islamic, all-encompassing form-ordering principle since he states "Architectural forms and decorations are temporally and locally bound to specific nations, cities and tribes, and so to their particular environments and traditions" [Madhi, 1983]. Haider does the same when describing that Islam is quite formal in the field of religious performance and social behaviour, "but beyond this socio-religious formalism, one can evoke almost complete freedom in sensory form". The genesis of form is based on a combination of climatical, contextual, site, technological, material, craft considerations and dictates of function [Haider, 1986].

The previous notions regarding the use of geometry in urban environments might lead to the following conclusion:

Geometry was perhaps a main ordering sky. The only kind element of nature the Arab-Muslim observes, as the air brings coolness and as such is considered a mercy of God [Fathy, 1983].

*principle in planned traditional cities such as palace and military towns*<sup>20</sup>. However, in most traditional settlements open spaces are not planned, but spaces left over from building activities [see page 19]. The geometrical open space concept seems mainly a hypothetical planning concept initiated by muslim scholars<sup>21</sup> [Akbar, 1984].

A variety of forms of every order has been created during the history of Islamic culture. These forms were not determined by the basic unity founded on the Koran, but by the local interpretation of it. This interpretation was strongly affected by the natural physical environment, and the political and [local] cultural environment within the forms were created [Kuban, 1978]. Incidental religious elements like art objects and calligraphy were added [Burckhardt, 1976].

Geometry may not have been a design principle for open space layout, but geometrical forms were without doubt an artistic means to symbolize certain basic Islamic values such as

20] The geometrical concepts used for Muslim cities, however, are always characterized by a subdued application of geometry in design. Abundant baroque forms consisting of perspectives designed to give the feeling of extended vistas will never be found [Burckhardt, 1976].

21] According to Akbar "the claim of orientalist that early Muslim towns were chaotic provoked muslim scholars to present those towns as planned and ordered. Unfortunately, ordered towns were perceived by these scholars as those laid out by the authorities or its representatives" [Akbar, 1984].

earth, fire and life in art and architecture<sup>22</sup> [Grabar, 1983 and Ardalan a.o., 1973]. A brief overview of the most important geometrical forms and their 'religious' meaning is given hereafter and is derived from "The Sense of Unity" by the Muslim writers Ardalan and Bakhtiar [1973]<sup>23</sup>.

- Triangle [point upwards]: a form active towards heaven and passive towards earth;
- Triangle [point downwards]: a form passive towards heaven and active towards earth.
- Two triangles [one points downwards and the other points upwards]: comprise the seal of Salomon, representing the tendencies of all forms and the actions of the four elements [water, light, soil and air].
- Square: symbolizes the most external and fixed aspect of the creation and is also symbol of the last of the created worlds.
- Cube: represents the earth, the macroscale and man in the microscale. "It is the supreme temporal symbol of Islam, as Kaaba means cube".

22] "The geometric basis of design was not, as in western architecture, concerned with the repetition of similar or related forms. The Islamic system assured a harmony of all parts, from plan to elevation to decoration and also served as a practical working method. The geometrical system was coupled with a programming and analytical process which probably occurred previous to and simultaneous with it" [Holod, 1986].

23] It should, however, be mentioned that:  
 -These forms might be subjective as they are based on only one Iranian Sufi source.  
 -Many of these religious symbols are historically older than Islam but have been maintained in the Islamic culture [Grabar, 1983].

- Circle or sphere [geometrically generated from the cross]: represents the lightness and total mobility of the Spirit<sup>24</sup>. The circle also symbolizes heaven and represents quality.
- Squaring the circle: represents permanence and immutability [square], together with earthly Paradise [circle].
- Octagon: represents the eight angels, the bearers of the Throne, who in turn correspond to the rose of the winds. It also seems to represent the Garden of Paradise.

### Conclusion

The previously described literature on geometry as a basis for design show that geometry cannot be considered as the specific Islamic image for the layout and form of urban open space. However, the author tends to believe that geometry in open space design might be a means to unite open spaces in a well ordered way, but as such is not specifically Islamic. Open spaces and open space structures obtain an Islamic signature only as the use people make of them expresses the Islamic conception of life based on the Koran and the Hadith. Geometry as such is therefore not considered a basic condition for the design of open space in Arab-Muslim countries in the Middle East. Geometrical forms, however, might be used in an artistic religious way to decorate pavements, walls or other objects.

24] "The heavens are said to move in a circular motion because such a form has no beginning and no end and is symmetrical in all directions with respect to the center. The circle is instrumental in the conception of man who, in the microcosm, begins his life as a sphere, perceives the visual world through the spheres of his eyes, and completes a full circle upon his death" [Ardalan a.o., 1973].

In conclusion it may be stated that:

*Any form-ordering principle might be applied in design of open spaces as long as the form of the urban environment encourages the remembrance of Allah<sup>25</sup>, motivates behaviour according to the dictates of Shariah and promotes the values of key Koranic concepts<sup>26</sup> [Sardar, 1985].*

#### 4.4 ENVIRONMENTAL AESTHETIC CONDITIONS

Before describing environmental conditions that may evoke aesthetic experiences by observers, the change in aesthetic conceptions in the Middle East is discussed.

The criterion by which the quality of open space forms is judged from an Islamic point of view might be the amount of expression of Islamic realities. Realities in this context are considered the Islamic ethics regarding social and environmental behaviour, and economical and political circumstances. According to

25] It is common knowledge that physical expressions symbolizing Allah are not allowed in Islam. Remembrances of Allah should therefore always relate to Koran and/or Hadith.

This concept is also applied in the Christian world. For example space and light in gothic cathedrals symbolize God. Space indicates the omni-presence of God and light indicates the bible expression 'God is light' [Vroom, 1986].

26] Key Koranic concepts or orderings principles in relationship with open space are users responsibility, privacy, waqf [discussed in paragraph 2.1.1] and ethical considerations regarding use of the environment [discussed in paragraph 2.1.4].

Burckhardt aesthetics in the sense of 'beauty' is also an aspect of reality since it might be considered an environmental quality that evokes 'pleasure' by observers. 'Beauty' in this context is more than a superficial fashion trend, it is a structural long term phenomenon and expresses the historical reality [Marwich, 1988].

In Islamic countries which are strongly influenced by modern western civilizations, however, 'beauty' is no longer recognized as such, but as the outcome of applied fashion trends whose outlines are utterly subjective and shifting [Burckhardt, 1976]. Modern environments are therefore often tasteless and interchangeable [Kuban, 1983 and Fathy, 1983].

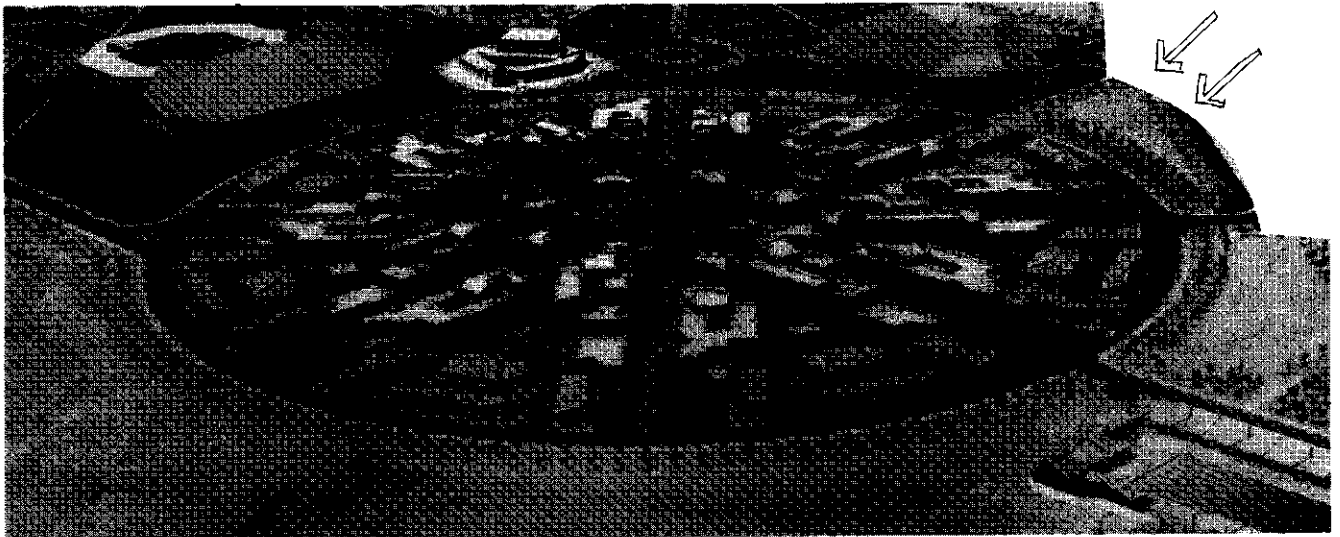
The main reasons for the change in the conception of 'beauty' in the Islamic world are:

1) The acceptance of modern western ordering principles in which often only 'the functional' is emphasized [Fathy, 1983], and which overrule the traditional Islamic ordering principles.

2) The general fascination by 'new' fashion trends and material inventions [Kuban, 1983].

In order to stop this tendency and to contribute to the aesthetic quality of open space that expresses the historical Islamic reality and that can be considered a structural long term phenomena, open space designs should provide for the following environmental conditions.

1) **Form-continuity in time and place**  
Aesthetical values, according to Kuban, have taken shape over time and can therefore be



← prevailing winds carrying dust and sand

FIG. 4.1 Round residential quarter of a military school complex in Jubail, Saudi Arabia. The layout is probably based on the round city of Baghdad [see page 19]. The design does not provide for preventing dust and sand blow.

considered cumulative [Kuban 1978]. This implies that Muslims throughout history have reshaped their indigenous forms and symbols to express their own spiritual aesthetic values [Haider, 1986]. It is therefore of no use to look just for values of the past since they only exist in abstract and in contrast to the modern period, but to look for values that reveal the continuum of forms of open space because "this is the way the old can inform the new" [Kuban, 1978]. Geometric open space designs are, for example, still applied but might be considered to be just more copies of a design concept of the past and not as the contemporary design answer to present and future needs of the people [figure 4.1].

Form-continuity in time and place in the design of open space is important as it expresses the continuity of urban open space

history in a specific area and as such also determines a sense of place. Applying the concept "form-continuity" in design will help to create contemporary urban open space as a visual and functional whole in which the Arab-Muslim cultural identity is expressed [Lynch, 1969 and Kuban, 1978]. A design example which illustrates this 'functional and visual whole concept' is the plan for a covered bazaar in Madinat Zayed in Abu Dhabi [see figure 3.16]. Form-continuity is especially important in urban preservation areas. Firstly it will guarantee "continuity of overall Islamic cultural identity throughout the process of modernization" of the area [Kuban, 1978] and secondly it will guarantee continuation of local or regional identity [Germeraad, 1986].

## 2) Ordering of the physical milieu

Only general conditions are mentioned here since a general ordering principle for the Arab-Muslim region in the Middle East does not seem to exist.

Ordering principles for open spaces should always be based on social-religious considerations. These considerations should relate to user's responsibility, privacy, the institution of waqf and ethical traditions, and should fit the local/regional natural environmental, historical-physical, social, political and economical context. Furthermore to make and to maintain ordering in the physical environment, including form ordering, seems to be important as it will help to create security and avoid insecurity for man [Vroom, 1986 and Rapoport, 1969].

Walter expresses the importance of ordering in the physical environment as follows: "Making and maintaining order is the cultural task. And part of that task is maintaining order in the physical environment. Gardening, housework, town planning and mountainering are not trivial. In so far as they name<sup>27</sup> and order the physical world, they keep us sane and they provide the basic structure so the best use can be made of freedom" [Walter J., 1985].

If geometrical ordering principles are applied in the design of open space, it is important that its regularity, polarity, and balance should always be in accordance with natural and historical processes of the place and

27] Naming the physical world means that man can indicate: where he is, how far he has to go, which direction he is going, how the environment is structured, etc.

functional requirements [Vroom, 1986]. Another important consideration is that too much geometry might create environments which do not stimulate senses and/or activities, which are important environmental quality factors.

## 3) Complexity

A certain amount of complexity is a desirable quality for each environment, as it might be considered stimulation for senses and for activities [Vroom, 1986]. Vroom states that need for stimulation of the senses is important for people, since a great amount of complexity is perceived as chaotic and a lack of complexity as monotonous. This need coheres with the complexity of the environment [for example need for privacy, safety, contact, communication, new information, variety of surprises, security and shelter]. To influence the amount of complexity of an environment, two different ways of approach can be followed. First of all the number of elements in the environment can be varied. Secondly its ordering [structure] can be adapted. since ordering [structure] and complexity are antagonisms<sup>28</sup> and do not exist without each other [Arnheim via Coeterier, 1973]. Vroom questions, however, if structure might be more than just visual ordering and may be partly something else and if complexity might be more than just visual variation [Vroom, 1986]. According to Akbar it seems that scholars often consider towns in the Islamic

28] A high degree of order reduces complexity and causes boredom, a high complexity decreases ordering and causes confusion [Arnheim via Coeterier, 1973].

world, laid out on the basis of orthogonal or any other geometrical plan by a central authority, as ordered towns in the visual sense<sup>29</sup> [Akbar, 1984]. Order in the traditional Muslim cities was not only based on visual order, but also on social ordering principles, which were part of the Islamic conception of life [see page 111]. Modern towns often lack this latter ordering principle [see paragraph 2.2].

It is therefore argued that structure in the traditional Islamic urban context could be considered a combination of visual and social-religious order<sup>30</sup>. In the modern context it seems to tend towards merely a visual ordering mainly based on vehicular accessibility and infrastructural considerations [figure 4.2] [see also page 75]. Complexity in this context is defined as visual variation, which in the traditional period had an Islamic social-religious responsiveness. □

29] Akbar calls towns laid out on visual ordering principles only "organized towns" [Akbar, 1984].

30] In practise it is a problem to define exactly this so-called socio-religious order, because it is not the direct outcome of the Koran and the Hadith, but an interpretation of the sayings in these books [see page 106 and 108]. The author believes, however, that the design considerations given in the next chapter [5] will contribute to provide for opportunities to achieve socio-religious order.

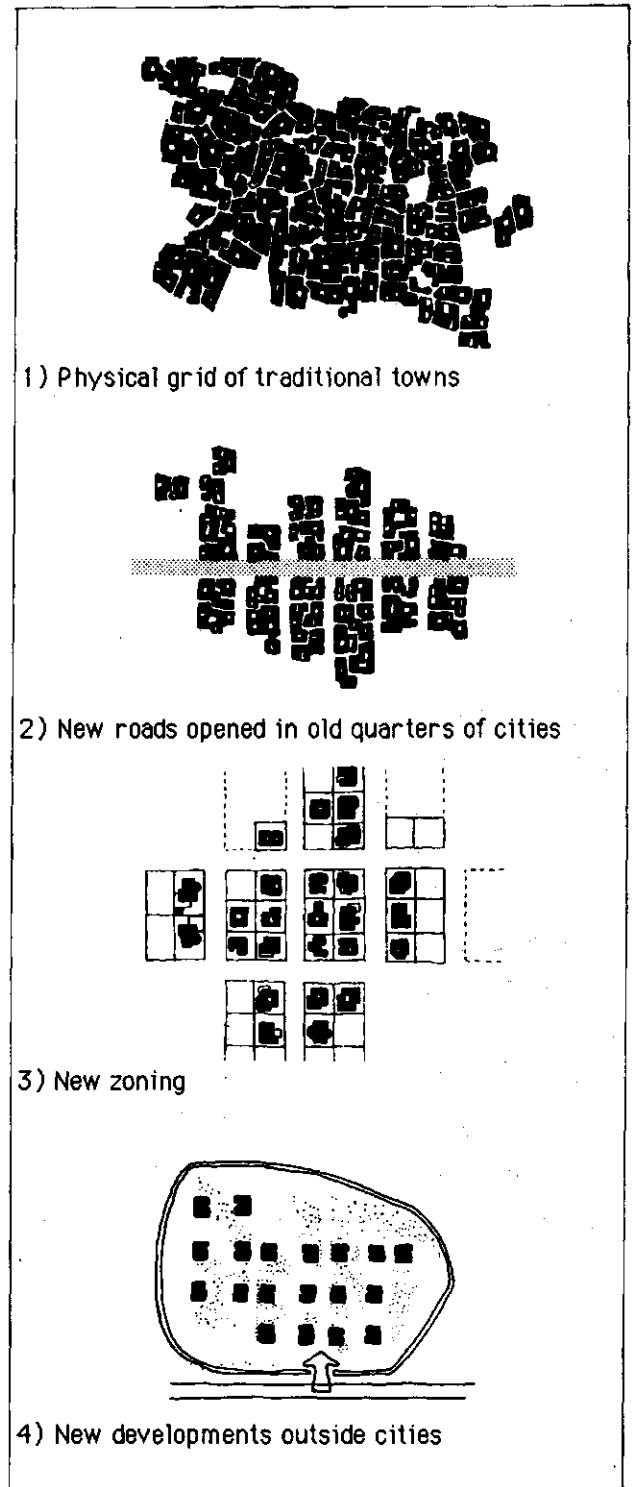


FIG. 4.2 Sketches illustrating the growing influence of vehicular accessibility on the development of the open space structure in Islamic towns [Egypt, Min. of Housing and Reconstruction/Min. of Planning, 1977].



## **TOWARDS A CONTEMPORARY OPEN SPACE DESIGN APPROACH FOR THE ARAB-MUSLIM REGION IN THE MIDDLE EAST**

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In order to give direction to the design approach for contemporary open spaces, the problem of contemporary open space design is closer defined, based on considerations which seem to cause the contemporary problems and weaknesses of open spaces in the Arabic world [paragraph 5.1].

In paragraph 5.2 the results of the chapters 1 to 4 are compiled and discussed, and translated into a contemporary design vocabulary describing design considerations. This vocabulary may form the basis for the elaboration of open space design, to be applied in concrete situations in the Arab-Muslim region of the Middle East. The chapter ends with general remarks regarding the application of the derived design considerations [paragraph 5.3].

For the sake of convenience and clarity the earlier pages to which parts of the text refer are given in brackets.

In order to enhance the readability of this chapter short repetitions or summaries of earlier paragraphs are given. This also makes it possible to read this chapter as an independent whole, separated from the rest of the thesis. It is hoped that this will contribute to the usage of the dissertation by people involved in open space design.

### **5.1 A CLOSER DEFINITION OF THE PROBLEM OF CONTEMPORARY OPEN SPACE DESIGN**

The *first cause* of the contemporary weakness of the urban open space in the Arab-Muslim region of the Middle East might be called 'modernisation' [page 69-72]. Modernisation means changing social and economic conditions coupled with the accelerating introduction of modern [industrial] technologies [Aga Khan, 1986]. The process of modernisation imposed, and continues to impose upon the people, a 'western' environment which is often in contradiction with their ethos of life expressed in their culture and their lifestyles [Porter, 1986]; and does not take into account the potentials and constraints of the natural factors of their environment [page 51].

*Another cause* of contemporary problems with open space design may be found in the so-called search for national identity and a design language to express this identity [Haider, 1986]. In this process the governments are the principal actors. They seem to monopolise the decision making at social, cultural and political levels, and decide on the introduction of urban concepts, often based on Western culture and Western technology, that should express the national identity, regardless of the real needs and expectations of the people [Akbar, 1984 and Arkoun, 1986] [page 23, 70 and 71]. According to Kuban the governments in the region were often not aware of the problem of identity when they

imported complete detailed Western designs [page 20]. Against this so-called "wholesale" modernisation, a problem of cultural identity has developed in recent decades [verbal communication Kuban, 1989].

The main task that designers face today when designing open space in the Arab-Muslim region in the Middle East can therefore be described as:

How to design open space with a positive contribution to the surroundings and/or users<sup>1</sup>, reflecting Islamic social/religious values partly expressed by the Sharia and consonant with the contemporary life in which the Arab-Muslim societies in the Middle East live.

Contemporary life in this context is considered a complex of economical, political circumstances and concerning, mainly, the 'material' aspects of life [page 101, note 27].

In the next paragraph basic design considerations for the development of open spaces are described which may positively contribute to the surroundings and/or users. Attention is given to mental and physical aspects which may condition further development of open space and help to define design strategies.

## 5.2 CONTEMPORARY OPEN SPACE DESIGN CONSIDERATIONS

### 5.2.1 INTRODUCTORY NOTES

The main concern for a designer dealing with open space is to prevent damage insulting to the essence of Islamic settlements. Insults were often introduced with the application of the modern concepts in design [page 72-80]. Contemporary open space design requires a design sensibility based on thinking-through the new, in the context of what exists. The last is the result of both human and natural processes and is expressed in: patterns of human association, patterns of use, patterns of movement, patterns of form, zones of privacy, semi-privacy and public, and natural environmental patterns [Smithson, 1973, Kuban, 1973]. These patterns and zones form together the essence of place which should be the starting point for each new open space development. The essence of place is not only linked to the natural and historical environment but also directly linked with the Islamic conception of life and as such, open space might be considered an important element for man's "being in the world". Norberg-Schultz stresses the importance of architectural space in design, from which open space is a part, as a condition for life [Norberg-Schultz, 1971]<sup>2</sup>.

2] Norberg-Schultz's argues in his book "Existence, Space and Architecture" that "architectural space may be understood as an concretization of environmental schemata or images, which form necessary part of man's general orientation or being in the world" [Norberg-Schultz, 1971].

<sup>1</sup>] For a description of positive contribution to the surroundings and/or users see page 5.

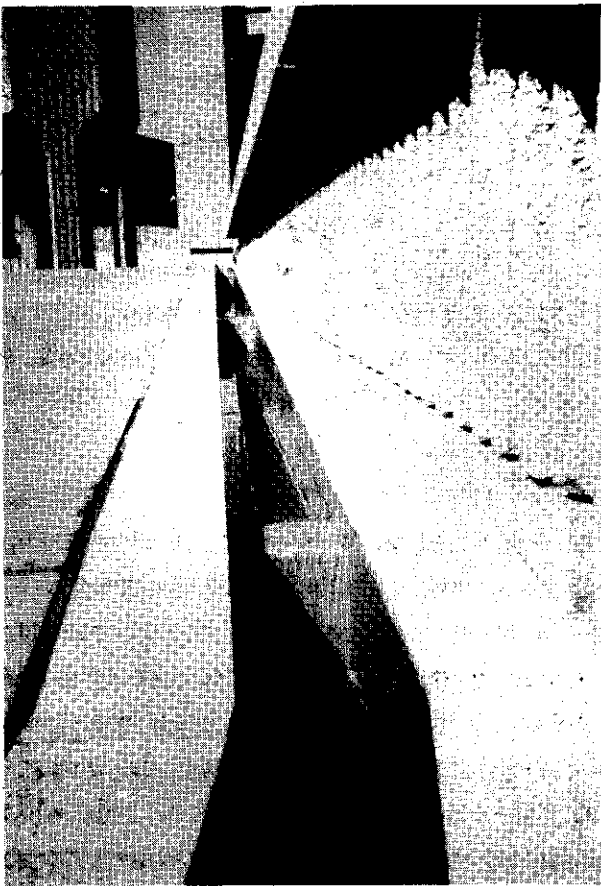


FIG. 5.5 King Fahd University of Petroleum and Minerals, Dhahran [Saudi Arabia]. Tiny canal along walkway emphasizes scarcity of water and creates cooling effect during hot summers.



FIG. 5.6 Dammam Sport City [Saudi Arabia]. Slopes covered with gravel lead runoff to planted areas.

characteristic and distinguishes it from designs in other regions where water is less scarce [figure 5.5].

- 3) Use of artificial techniques to diminish water losses.

These might be achieved by:

- A) Applying soluble plastic sprays on leaves [anti-dessicants], to reduce evapo-transpiration during hot and windy periods.
- B) Covering the soil between plants with plastic sheets to diminish evaporation of soil moisture.

- 4) Development of irrigation and drainage systems.

Proposing systems which fit the site and are based on the quantity and quality of the water available.

- 5) Harvesting rainwater.

Harvesting of rainwater [catching and storing rainfall surface runoff] can supplement irrigation. However, due to the soil conditions and the unreliable rainfall, only a few areas in the region are suitable for this type of water saving on a large scale, for example southwest Saudi Arabia and North Yemen. Detailed studies are therefore necessary before collection and storage of rain water on a large scale is proposed.

Collection and storage of rainwater on a small scale in areas with some precipitation, however, is always recommended. Rainwater collected from rooftops, driveways and other pavements can be used for the irrigation of residential landscapes. Sloping sites provide

the greatest opportunities for harvesting the collected water can be used directly in planted areas or stored for further use [figure 5.6].

Figure 5.7 [see page 124-125] illustrates how the above recommendations regarding the natural physical factors can be applied in design. The design showed in figure 5.7 is a proposal for an open space of the King Fahd University of Petroleum and Minerals in Dhahran, Saudi Arabia. The site had, with exception of the trees along the roads, no vegetation.

#### NATURAL VEGETATION

Based on the capability of natural vegetation to reduce sand and dust movement and to ameliorate the micro-climate [page 50-51] it might be useful, especially in open spaces which will not be completely planted or paved, to preserve the existing natural vegetation.

In order to achieve a satisfying design result the following design conditions should be considered:

- Assessments how the existing natural vegetation can contribute to the improvement of the micro-climate and/or prevention of erosion. Based on the assessment appropriate preservation and conservation strategies should be developed.

- Incorporation of existing natural plants in design proposals [figure 5.8].

- User's and client's education regarding the potentials of the preservation of existing natural vegetation in urban areas.

## 2 Privacy

Design of early Arab-Muslim cities was



FIG. 5.8 Non-planted natural groundcovers under street trees protect soil from windblow [KFUPM,1984].

merely based on the application of functional spaces defined by Islamic philosophy [page 1], by which the segregation of space in male and female spheres played a major role [page 25-26 and 56, note 50]. These circumstances resulted in the application of a 'private open space' concept in design [page 29], which emphasizes a transition from private via semi-private to public spaces [page 25-26]. In this way conditions for a private domestic life, impregnable for passers-by, were created. The application of private space concepts in historic open space patterns in the Arab-muslim region in the Middle East differed per region but all express, as far as they exist, the almost universal concept of privacy based on religious injunctions [page 26-28].

Contemporary built and planned open space patterns in the region also show a contrast between private and public space but often transitions between the two are less gradual than in the traditional situations [page 29-31].

Sometimes design solutions make it impossible to respect other people's privacy in which cases adaptations by users may occur [page 32].

The character in semi-private areas varies, depending on use and function of the open space, and on the different emphasis on the notion of privacy by decision makers and designers [page 29-30]. Central theme in the traditional and contemporary design approach, as summarized here, is the protection of [extended] families and their females, against physical and visual intrusions from the outside world. This seems mainly achieved by building dwellings like "castles" together with the creation of private open spaces which are both isolated from public or essentially male world [page 26]. According to the interpretation of the Koran and the Hadith, privacy is something that is allowed to an individual or group by others and not a right that should be forced upon people by spatial means [page 25]. It can therefore be argued that the design interpretation of privacy should be based on the following design consideration:

*The division of open space structures in private, semi-public and public space should not be forced upon people by spatial means, but open space designs should be flexible enough to allow privacy to users and others.*

To meet the above consideration, design solutions has to provide for this opportunity on both the dwelling unit, residential unit [e.g. neighborhood, district] and settlement level.

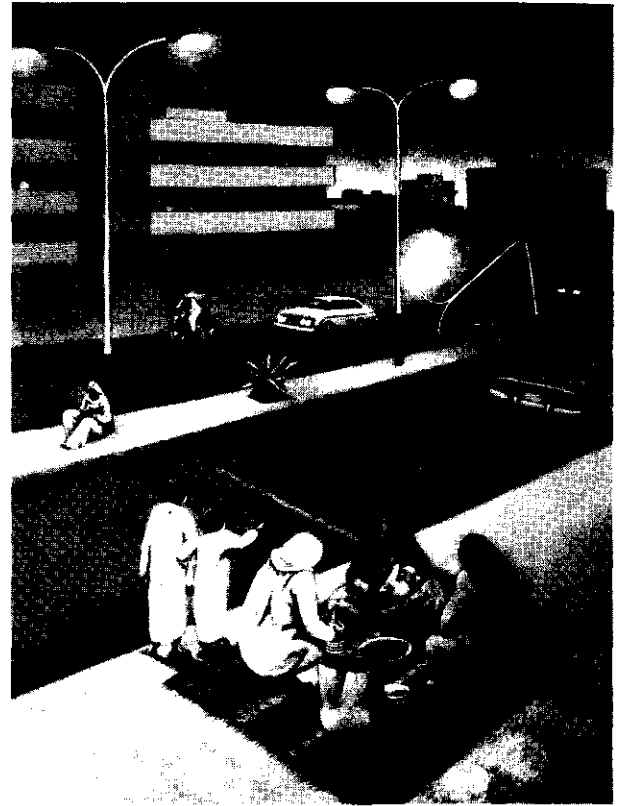


FIG. 5.9 Painting "Sidewalk Picnic", Saudi Arabia, by Malin Basil, 1977. Use of the street indicates that the place where the family is sitting has temporary a private character and that other users should avoid this area. The walkway is wide enough to allow the family their privacy.

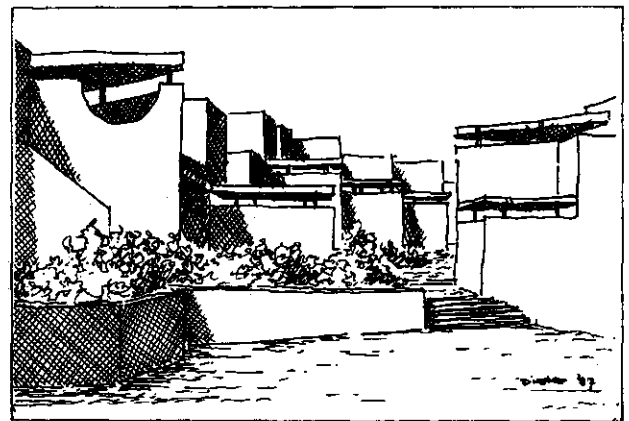


FIG. 5.10 Support Staff Housing area at the King Fahd University of Petroleum and Minerals in Dhahran, Saudi Arabia. Walled terraces and winding walkways make it possible for passersby to allow privacy to inhabitants.

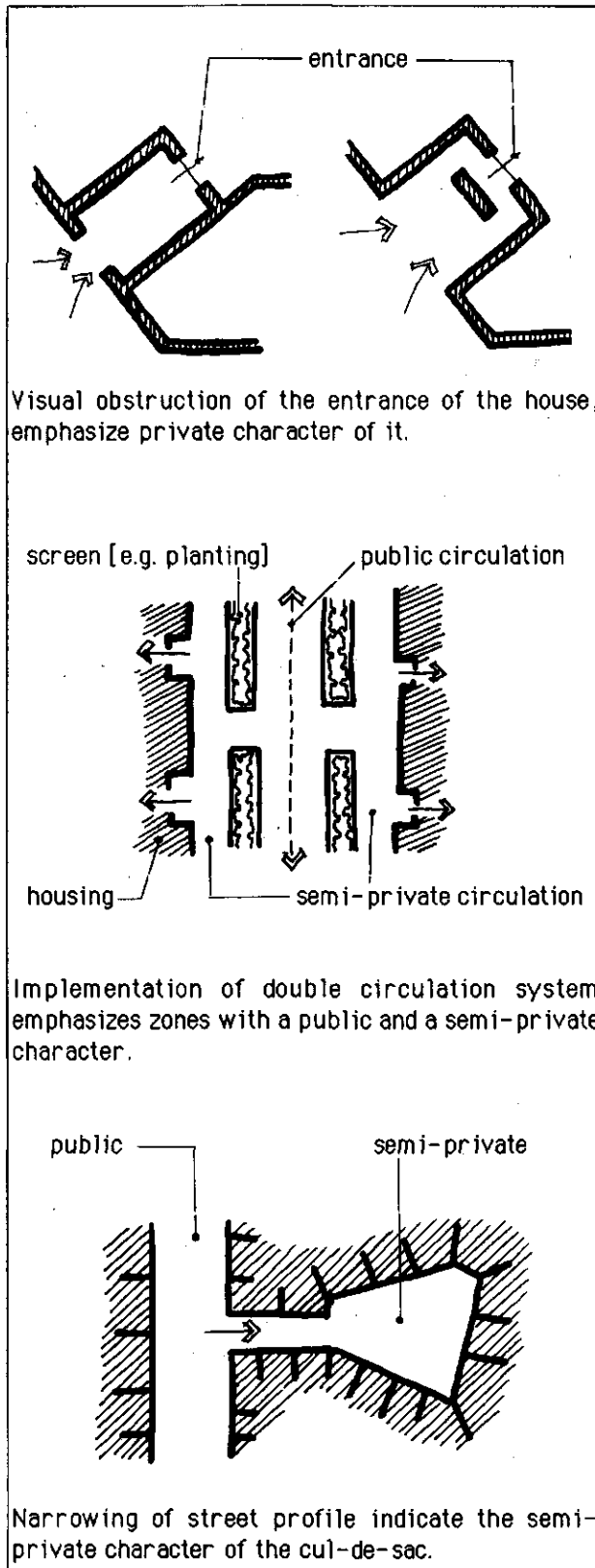


FIG. 5.11 Some schemes to illustrate how open space can express its private or public character.

The main design condition on all these levels is that the design should physically and/or functionally express what the place wants to be from the privacy point of view of its users. Figures 5.9, 5.10 and 5.11 illustrate this principle.

Opportunities to allow to others a degree of privacy are strongly related to the Islamic concept of user's responsibility, which is based on preventing harm to others [page 18].

### 3 User's responsibility

The interest of people in open space is based on a need to grasp vital relations in one's environment, to bring meaning and order into a world of events and action. Most of man's actions involve the identification of the physical space surrounding him [for example to build a new element or to make adaptive changes], to act means to understand the spatial [syntactic] and functional/social-religious [pragmatic] relations of a place and unify the relations in a 'space concept', which will guide the action or will be the basis for an open space design [page 101-102].

In the Islamic world space concepts are achieved along two lines. A traditional one is called autonomous synthesis. Use and physical manifestation of open space was mainly determined here by users [Akbar, 1984; page 18, note 12]. A 'modern' one, by Akbar called heteronomous synthesis [page 21], started in the second half of the nineteenth century and has continued until the present. In this case user's decisions here are replaced more and more by decisions on the part of authorities.

This results in a decrease of users involvement in layout and physical manifestation of open space [page 21]. This period also shows an increase of alien, essentially Western, design approaches and concepts affecting the design of the open space [page 69-72]. A significant result of this influence is the development of strict, often legislative, codes and regulations by the government and/or municipalities regarding use and physical manifestation of urban open space [page 72], and which are not always related to the true needs and expectations of users [page 22].

Practise in Saudi Arabia and Egypt, however, shows that autonomous synthesis is still a living tradition [page 54 and 98].

Based on this conclusion and the often negative effects of the application of heteronomuos synthesis outlined on page 20 and 21, the following design consideration is set forth:

*Open space layouts and forms should provide for possibilities for autonomous synthesis based on user's responsibility. This in order to achieve meaningful open spaces responsive to the needs and social-religious values of people. This can be considered as a synthesis between individual and public needs.*

In order to provide for autonomous synthesis, opportunities in open space design user's participation in decision-making is essential. To achieve an optimal result the following strategy is proposed:

1) Thorough investigation of the individual and public needs of the people involved.

2) Physical and quantitative determination of the public facilities and provisions which require open space.

3) Determination of areas which may be partly or completely developed by users themselves without doing harm to public interests. This determination should be based on assessment of the impacts on public provisions and facilities, natural environmental and social/religious values as certain design solutions are left to the users.

In practise the extent to which people can decide themselves will vary. Generally, in poor areas, where people often are compelled to build their houses themselves in available local materials, the opportunities will be greater than in richer areas where the authorities often provide for the housing, built according to imported and fixed construction techniques.

An extreme hypothetical example of how to provide for opportunities for user's responsibility, and to create at the same time a wanted open space structure is given in figure 5.12.

#### 4 Waqf

Open spaces which are physically recognizable as part of endowments are expressions of the community spirit of Islam [page 34]. A tendency to decrease the urban design

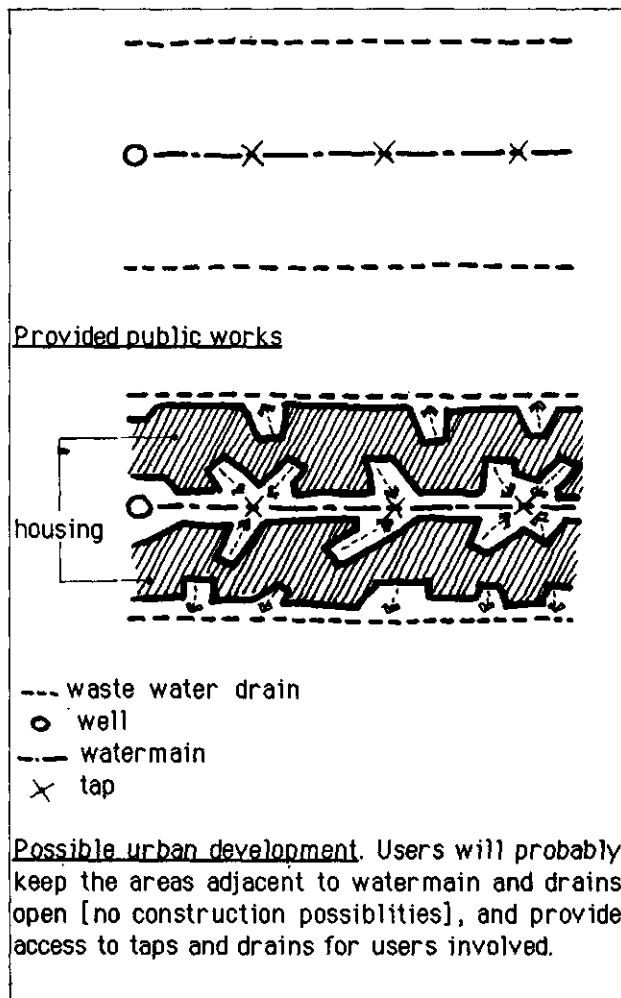


FIG. 5.12 Instead of building non-design interventions such as public waterworks, taps and waste water drains are provided. These facilities may act as incentives for the development of mainly a linear open space.

Limitation of waqfs can, however, be observed [page 34]. This process might lead to the disappearance of still existing and physical recognizable Islamic institutes [page 33-34] in the future. From the point of view of historical continuity [page 113] the following design consideration is set forth:

*Open spaces which are part of an endowment*

*should be kept to act as living historical proof of the community spirit of Islam.*

In order to maintain open spaces which are part of an endowment, the mere preservation of the area will in many cases not be the answer since it is impossible to preserve everything. Since conservation offers motives for imagining new functions, and embellishes the monotony of every life [Kuban, 1978] it is therefore argued that:

When dealing with open spaces which are part of an endowment the boundary and the functional character [e.g. vegetable/ fruit garden, meeting place] should be considered as the part that contributes to the historical continuity of the place, and should be kept. The layout of the 'interior' of the area can be transformed as long as it corresponds with the original intended functional character.

In conclusion it can be stated that privacy, user's responsibility, and waqf have a direct relationship to open space. On the contrary, environmental ethics have a more universal character.

### 5.2.3 PHYSICAL ASPECTS

In the previous paragraph Islamic traditions are discussed which might be considered of overall importance for the functional and social-religious organisation of open spaces. In this paragraph attention is given to the physical ordering of open spaces and the role of the heretofore described traditions in the physical ordering of the environment.



### Open space pattern: defined by setting and man

Research shows that the idea of open space patterns appears to be based on function and Islamic conception of life rather than on formal ordering principles [page 102, 109 and 111]. The open space pattern seems to be recognized by the user as being meaningful on grounds of cultural/religious notions [privacy, user's responsibility, waqf, ethics and aesthetics], and economical and/or political values. The setting of open space should provide cues that people understand and guide cultural/religious appropriate behaviour, responses and actions [page 17]. Physical cues, such as walls, gates, materials, house styles, reinforced by the people's dress, their language, activities, sounds and smells, and many other variables may help to understand the social-meaning of a space [Rapoport, 1982]. The following design consideration is therefore forwarded:

*The identity of an open space in the Islamic world seems not primarily determined by its form but by the relationship between setting - in the sense of place - and man. Essential is that the setting should provide for appropriate social/religious behaviour and should remind people how to behave.*

In order to illustrate some design implications of this consideration two examples are given [figure 5.13 and 5.14].



FIG. 5.13 Neighborhood park in Jubail [Saudi Arabia]. Wide walkways provide opportunities for pedestrians to pass without hindering each other. Also, this reduces the potential tension that may be created when men are forced to be at close distance to strange [non-family] women.



FIG. 5.14 Physical elements that seem to form an extension of the house indicate that family activities can be expected here. Subsequently this indicates that decency in behaviour might be required if passing by.

**Open space pattern: a comprehensive functional and social-religious whole, existing of a recognizable system of places**

Studies in Fayyum [Egypt] suggest that open space patterns consist of an interconnected set of places used for activities. A system which

forms an existential foothold for its users [page 98]. Open space is an important condition for human existence in an urban environment. This condition comprises two aspects:

- 1) The existence of signs for use such as: indicating centers or places, directions or paths, and areas or domains.
- 2) The concrete physical elements, which inhibit and facilitate activities, and predict and prescribe behaviour and actions.

The "sense of place" is an important point of reference in the environment. Places can be orientated towards individuals [e.g. garden, courtyard and fina] or groups [e.g. streets and squares] [page 58-66].

The most important example of a place of reference in the Islamic world is undeniably the Ka'aba in Mecca, which is considered the center of the Islamic world, the focus where the Islamic image is represented. The center is connected with paths [roads, airliners] which lead to the meaningful goal. Pilgrimage, thus, is one of the great symbols of human existence [Goldammer, 1960 and Norberg-Schultz, 1971].

The place at a local scale is related to the notion of dwelling, in the sense of the place from where the world is explored and experienced, and to which man always returns, the so-called dialectic process [page 81, note 1]. The main characteristics of these open space centers are twofold. First of all they always seem to be created for a specific function such as gardens for family purposes, squares for market activities, and mosque courtyards for praying. In the second place

they are characterized by the culture of privacy [page 23-33]. It should, however, be noted that the actual use is not always the use the space was designed for [page 84 and 100]. Use of open space is related to the meaning people attach to it [page 81 and 100].

This meaning is defined in relation to other spaces [page 88]. Open spaces exist as part of an open space pattern, consisting of directions and paths, which link the spaces.

In the traditional period paths and roads divided the Islamic urban area into parts or domains [khittas] inhabited by identifiable groups, such as tribal groups or ethnic groups [page 68]. Traditional domains can be described as: a relatively unstructured 'grounds', on which places and paths appear as more pronounced 'figures'. In these domains open spaces, essential for the existence of inhabitants, were unified into a comprehensive whole [page 4, note 4] [Norberg-Schultz, 1971]. Adjacent to these factors also local and/or regional traditions, economic, political and natural physical factors determined their physical character [page 26, 40, 45, 57-note 52, 110]. The differences in layout and shape of open spaces in domains might therefore be considered the result of different sub-cultural ambiances which exist in the Middle East [page 7].

Domains could be considered as 'image carriers' which expressed the identity of its inhabitants [page 68].

This traditional process has changed since the introduction of modernity and seems to result in urban areas which become more and more

in male and female spheres [page 24]. This segregation implies that the social intercourse, outside the family sphere, is mainly a social interaction between males.

When dealing with social integration one should be aware that the social interaction, which stimulates this integration, is changing rapidly. New technical means of communication and an increasing physical mobility [cars, public transportation, planes] have exceeded the traditional integration possibilities tied in the traditional urban structure. As in Islam the encouragement of human interaction is an important factor [page 76-77] it is argued that:

*Contemporary open space designs should facilitate and promote interaction opportunities within and outside the [extended] family, by containing conditions and incentives for social and religious intercourse.*

An example how social intercourse might be achieved is indicated in figure 5.18.

To promote religious intercourse the accessibility to religious institutions, such as mosques and schools, should be maximized. This can be achieved by creating strong physical and visual linkages between these institutions and the people [Mavrakis, 1984] [figure 5.19].

It should, however, be mentioned that in true Islamic communities social and religious intercourse are connected to each other, since



FIG. 5.18 Terrace for males in Luxor [Egypt], an example how open spaces might facilitate and promote interaction opportunities outside the family.

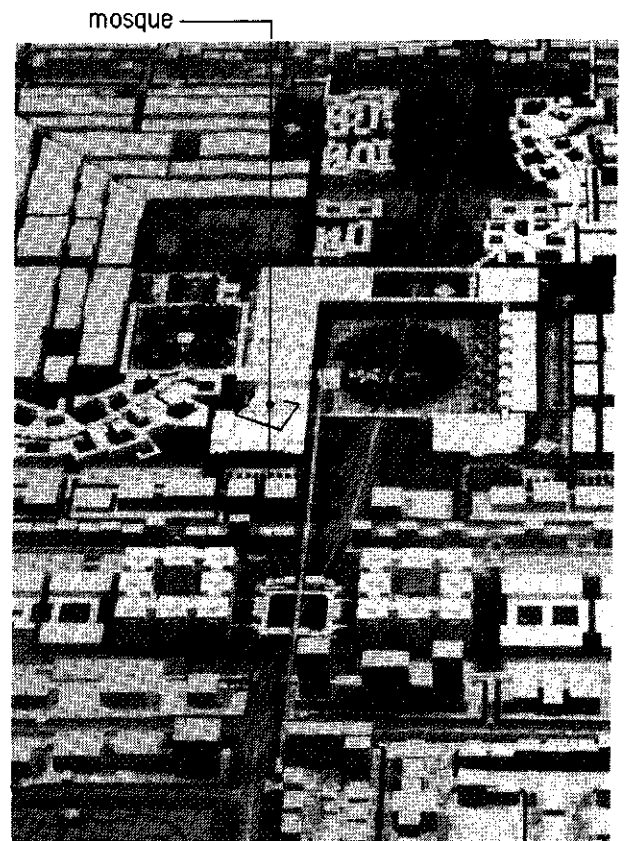


FIG. 5.19 Proposal for a Friday mosque in Madinat Zayed in Abu Dhabi. Pedestrian bridges and direct walkways provide for an optimal linkage between mosque and worshippers. The dome forms a landmark in the area [URPAC, 1982].

every social activity includes religious conjunctions and motivations.

### **Aesthetic quality of open space**

Open space designs should provide for form-continuity in time and place, ordering of the physical milieu as well as complexity [page 112-115]. This in order to contribute to the aesthetic quality of open space, expressing the Islamic reality.

Based on this observation the following design consideration may be set forth:

*In order to achieve an aesthetic quality open space designs should be based on:*

- 1) *The continuity of the local or regional urban open space history [form-continuity in time and place].*
- 2) *Visual and functional ordering principles, based on Islamic values, and which stimulate the senses, behaviour and activities.*

An example of aesthetic quality of open space is found in figure 5.20.

### **2.5.4 ASPECTS OF LEGAL [SHARIA] INTERPRETATION**

As the topic of this study is focused on the regeneration of the Islamic tradition, governmental regulations for the design of open spaces should be viewed in relation to Islamic notions regarding law. This because the Islamic state cannot exercise legislative power since God is the only legislator in Islam. The state merely applies and enforces the



FIG. 5.20 The preservation of an old well in Jeddah [Saudi Arabia], adds an aesthetic quality to the environment. The well surrounded by renovated historical buildings expresses continuity in time and place. The ordering of the area is still based on Islamic values such as, keeping the approach to the well public and free from obstructions. Furthermore the area still provides for ablution opportunities.

Sharia, which is correct as long as the term "law" is restricted to the Sharia. In practice, however, law tends to be viewed as a body of norms which people are in some sense compelled to adhere to by virtue of threats of punishment. Without these threats, the norms in question do not validate law [Weiss and Green, 1987]. A distinction can therefore be made between the law of God, in the making of

which the state plays no role, and governmental laws for which the state is responsible. Ideally those norms should conform to the Sharia, to avoid the introduction of norms and regulations which might be alien to Islam [page 69 and 72].

Also in the context of open space development this danger occurs. Many designers and students are aware of this problem and try to avoid the application of alien open space regulations and concepts by looking for open space precepts in the Koran [Arkoun, 1986 and student discussions, 1987]. This approach, however, causes another problem: selecting Koran verses or fragments to apply them directly in contemporary design concepts which is a semantic manipulation of the Koran text, since they are isolated from their original linguistic and cultural-historical context [Arkoun, 1986]. It might therefore be stated that:

*The problem of designing contemporary open spaces can only be approached by interpreting the Koran in the context of modernity, consisting of cultural conditions which define the contemporary Islamic conception of life [page 81].*

### 5.3 CONCLUDING REMARKS

In conclusion it is believed that a renewed integration in the open space design process of all the mentioned considerations in paragraph 5.2, might lead to the development of open spaces with a positive contribution to the surroundings and/or users in the Arab-

Muslim countries in the Middle East.

Through this approach open spaces could be created which can be considered systems of significations that materialise in the individual and collective experience of the present Islamic community [Arkoun, 1986]. They will contribute to keep the community alive [page 13]. Evidently this approach is strongly related to culture [page 13]. Culture, the interaction between human management and the forces surrounding man [Van Peursen, 1975], might be described as a continuous search for human physical and spiritual answers on questions initiated by his local or regional surroundings [Fathy, 1983].

The analysis and study of forms and layouts of open spaces in the various countries in the middle East, leads to the conclusion that their physical organization and appearance were a result of a process in which religious and regional cultural traditions, political [e.g. national identity] and economical factors, and the potentials and constraints of the site play as everywhere a combined role, but a culturally defined sign system was inherent in the shaping of the physical environment [page 13, 57, 70 and 110]. It is therefore argued that:

*In order to develop open space with a positive contribution to the surroundings and/or users, designers should search continuously for contemporary [regional] physical sign systems and ways of behaviour which are an expression of the Islamic social and ethical view of life.*

The ideas discussed in this chapter are considered as a beginning for this continuous search. They might contribute towards a contemporary Arab-Muslim open space design approach for the Middle East.

They may also contribute to the 'dialogue' between users and open space, through which the establishment of meaningful and coherent physical open space systems may be realized [page 101]. This is, however, only achievable as both users, designers and decision-makers understand the language of open space, by which the meaning people attach to their environments plays a major role. It is therefore argued that:

*Only an awareness of the contemporary functional and socio-religious meaning and values of open space from an Islamic point of view by both users, designers and decision-makers can contribute to the prevention of a further degradation of the Arab-Muslim identity in the Middle Eastern environment.*

The application of the proposed design considerations in the previous paragraphs make only sense when the users of open space have not forgotten their purpose based on underlying Islamic ideals. When these are forgotten the physical expression of Islamic ideals in open space becomes decoration as ordering and form of open space is not longer structurally credible.

In the traditional situation the society was mostly a so-called "mythical" one in which existed a unity of knowledge based on the Koran and Hadith and [social] behaviour,

which caused within the society a unity of social relations and individual obligations [page 7]. The present times in Islam, is a phase in which social relations and individual obligations are less and less connected with each other. Knowledge [truth], ethics [goodness] and artistic experience [beauty] separately are recognized. The essence of this phase in the context of open space design is that man is less interested in "what" as fixed data, but more in "how" the integration of knowledge, ethics and artistic experience can be achieved in open space. A process which is characterized by the change from an individual ethics [how should I act and behave in relation to my fellow man] to a group ethics, determined by authorities [page 21-22 and 70]. Group ethics regarding open space existed also in Islam in the past [page 68 and 70] but seems now more emphasized and deals with the "how" of man's actions and focusses on social patterns [structures] more then on persons. Van Peursen describes these different ethical levels respectively as macro-ethics and micro-ethics [Van Peursen, 1975]. Ethics seems no longer the sum of fixed rules [the "what"], but involves the critical question how man is responsible for the results of the modern technology, in which preventing and breaking impasses play a major role. This ethics can only be achieved by direct interplay between actual problems and moral sense. Van Peursen calls this type of ethics "the ethics of interaction" [Van Peursen, 1975]. Ethics is furthermore becoming more and more complex and can no longer be completely grasped by individuals. Authorities [for

example governments and municipalities] have taken over group responsibilities [page 70]. Yet to achieve an optimal context for individual ethical behaviour and use of open space, administrators should establish macro-ethic conditions in which the micro-ethic considerations of the user can still be achieved. In terms of micro-ethics the sense of perception is important since experience based on perception via physical manifestation will help to create a link between the formulated rules and actual use and activities.

I have tried to demonstrate that the establishment of a meaningful and coherent open space system depends on the application of social and ethical aspects of the Islamic conception of life and historical continuity in design.

If these factors are not incorporated in open space patterns the system becomes meaningless. Essential in the design approach of open space is the creation of an imageable structure that offers rich possibilities for identification and allows for different interpretations related to use without losing its identity.

Traditional and new open space structures should be united. This unity in plurality is certainly not a new idea [Norberg-Schultz, 1971], but in the here given approach there might be a renewed interpretation based on the essence of the Islamic tradition.

The lesson from the Islamic tradition, constitutes a heritage which might contribute to recreate a living synthesis between the Islamic conception of life and the future. □

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**PARTIAL STUDIES EXECUTED BY  
STUDENTS AT THE KING FAISAL  
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KING FAHD UNIVERSITY OF  
PETROLEUM AND MINERALS IN  
DHAHRAN, SAUDI ARABIA,  
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## BIOGRAPHICAL NOTE

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Pieter Germeraad was born on April 27, 1947 in Hilversum, the Netherlands. After his military service he entered in September 1968 the Agricultural University in Wageningen in the Netherlands where he studied Landscape Architecture and Ecology of Habitat. The author received his Masters degree in Landscape Architecture at this university in Januari 1975.

From 1974 until December 1983 Pieter Germeraad was engaged in professional practise with Kuiper Compagnons B.V., a consultancy firm for urban and regional planning in Rotterdam. He was as landscape architect and ecologist of habitat involved in environmental and urban planning and design, and rendered general landscape and urban advisory services to municipalities and other clients in the Netherlands. In 1979 he became senior Landscape architect and started to work part-time with URPAC, an international oriented subsidiary company of Kuiper Compagnons. Between 1979 and 1983 his work included not only assignments in the Netherlands but also several landscape projects in Saudi Arabia.

Due to his growing interest in the Islamic world he exchanged his position with Kuiper Compagnons in December 1983 for a position as assistant professor at the King Fahd University of Petroleum and Minerals in Dhahran, Saudi Arabia. During two and half years he was involved in teaching urban planning and landscape architecture at the City

Planning Department of the College of Environmental Design.

From September 1986 until December 1987 he was employed, as asistant professor, with the King Faisal University in Dammam also in Saudi Arabia. At the Landscape Department of this university he taught e.g. 'Environmental Planning in Arid Lands' and 'Evolution of the Middle Eastern Landscapes'. During his stay in Saudi Arabia Pieter Germeraad started initial studies regarding the design of open spaces in an Arab-Muslim context. Furthermore he was involved in several beautification projects in the Eastern Province of Saudi Arabia.

Between Januari 1988 and the submission of his doctoral thesis in 1989 he was a research fellow in the Department for Ecology of Habitat at the Agricultural University in Wageningen to finalize his study on the above mentioned subject. During this period he combined his research with a teaching position at the Department of Landscape Architecture at the same university and was professional involved in several design projects in the Middle East.

At the moment Pieter Germeraad is a part-time consultant with ECOPLAN/LANDPLAN B.V. in Willemstad, the Netherlands. □