1993

A Geographical Semiotic Analysis Of Four Damascene Residential Neighbourhoods: Spatial Design And Behavioural Relations

M Salim Ferwati

A GEOGRAPHICAL SEMIOTIC ANALYSIS OF FOUR DAMASCENE RESIDENTIAL NEIGHBOURHOODS

Spatial Design and Behavioural Relations

By

M. Salim Ferwati

Department of Geography

Submitted in partial fulfilment
of the requirements for the degree of
Doctor of Philosophy

Faculty of Graduate Studies
The University of Western Ontario
London, Ontario
December 1992

ISBN 0-315-61328-8

ABSTRACT:

Urban environments are geographical semiotic information systems represented by neighbourhood layouts, organization of streets and house designs. These geographic features form statements of and contexts for different socio-cultural functions and behaviourial patterns. Geographical semiotic information systems as expressed by urban environments are necessary means by which individuals and groups learn, use, and evaluate their urban environment. This dissertation examines these ideas as a basis for analysis of samples of four different neighbourhood designs in Damascus, Syria.

Analyses and comparison of examples of four urban environments in Damascus called Traditional house neighbourhoods, Attached apartment neighbourhoods, Detached apartment areas, and Elevator apartments are presented in four parts. Part I presents the conceptual framework, and theoretical underpinnings drawn from semiotics, architectures, and behaviourial geography. Five conceptual models are presented to relate the communication process to people interacting in the built environment.

Part II uses syntactic analyses to evaluate neighbourhood street patterns. Connectivity among different spaces reflects socio-cultural rules that relate to behaviourial concerns with privacy, security, sharing, integration, and control. Analyses show differences and similarities among the samples with regard to these human interests.

Part III is a pragmatic analyses of residents' expressed preferences for specific features in urban environment. These analyses show experience with design elements prove to be an important factor that affects inhabitants' satisfaction with their residences. Also, urban social values that people admire most (such as display of wealth, social status, and

cleanliness of neighbourhoods) are important information people use in judging urban environments.

Part IV is a semantic analysis of meanings associated with the built environment as understood by the inhabitants. It demonstrates that the more frequent interactions are with a design element, the more varied and intense are meanings people associate with it. Associated meanings combine functional, temporal, social and/or spiritual signative evidence. The analysis demonstrates the utility of geographical semiotics to inhabitants. It further illustrate how understanding geographical semiotics of the urban landscape is indispensable for developing meaningful urban environments.

For Sara

Acknowledgements

I would like to express my heartfelt gratitude to those who encouraged me and helped me with their advice, assistance, and knowledge.

To the chairman of my committee, Professor Elaine M. Bjorklund, whose guidance has directed me through my Ph.D. degree and provided me with insight into the complexities of semiotics, and whose generous contributions led to the evolution of this dissertation.

To Professor Donald Janelle, whose enormous assistance has provide me with insight into the complexities of urban geography, and supported me with references and ideas that reinforced this dissertation.

To Professor William Code, whose suggestions and advice have been enormously useful to my research.

To Professor Talal Akili, Dean of the Architecture School in Damascus, Professor Ra'if M'hana, Nazi'ih Kow'kibi, and Walid Syrawan, all of whom encouraged me to continue my graduate studies.

To my family, whose steadfast support and love throughout my academic career has sustained me.

To my wife who stood with me and encouraged me.

To my friends, Adib Fadel, Ahmad Alhajj, Ali Alnahawi, Assad Alazzum, Jalal Istanbouli, Jon Bell, Aiman Yousaf, Nabil Rabah, Nazih Alhajjar, Omar Anssari, Peter Dudinks, Radown Ramadan, and Yasser Abou Shaher, whose suggestions, help, and encouragement were very important to my research achievement.

TABLE OF CONTENTS

Page

CERTIFICATE OF EXAMINATION ii
ABSTRACT iii
DEDICATION v
ACKNOWLEDGEMENTS vi
TABLE OF CONTENTS vii
LIST OF TABLES x
LIST OF FIGURES xiii
LIST OF APPENDICES xvii

PART I. INTRODUCTION

CHAPTER 1. PROBLEM AND HYPOTHESES

1-1. Introduction 1
1-2. Old and New Built Environments 6
1-3. Goals of the Study 8
1-4. Questions and Hypotheses 10
1-5. Case Study: Damascus 12
1-6. Study Approach 13
1-7. Conceptual Framework 14
1-9. Organization of the Study 19

CHAPTER 2. DAMASCUS, LOCATIONAL CHARACTERISTICS AND URBAN MORPHOLOGY

2-1. Introduction 20
2-2. Locational Characteristics 21
2-3. Origin of the City 23
2-4. Locational Relationships 25
2-5. Historical Background 25
2-6. Basic Islamic Middle Eastern Built Environment and Cultural Features 32
2-7. Traditional Built Environment 39
2-8. Modern Built Environments 42
2-9. Neighbourhood Typology (Study Areas) 48
2-10. Summary 53

CHAPTER 3. GEOGRAPHICAL SEMIOTICS: LANGUAGE OF URBAN ENVIRONMENTS

3-1. Introduction 54
3-2. Semiotics and its Geographical Application 55
3-2-1. Linguistic Origins 56
3-2-2. Urbanscapes as Sign Systems 59
3-2-3. Urban Environment as Dynamic Semiotic Systems 67
3-3. Geographical Semiotics as Communication Process 71
3-3-1. Model of Communication System 72
3-3-2. Behaviour as Spatial Search 74
3-3-3. Human Built Environment Interaction Model 87
3-4. Summary 80

PART II. SYNTACTIC ANALYSIS 81

CHAPTER 4. DESIGN FEATURES

4-1. Introduction 83
4-2. Method and Tables 83
4-3. Differences in Number of Design Features 84
4-4. Differences in Kinds 87
4-5. Modern within the Traditional 90
4-6. Traditional within the Modern 91
4-7. Modern within the Modern 92
4-8. Summary 92

CHAPTER 5. SYNTACTIC ANALYSIS, OUTDOOR SPACE

5-1. Introduction 93
5-2. Controllability of Open Space 95
5-3. Measurement of the Degree of Control 96
5-4. Discussion 100
5-5. Degree of Integration 108
5-6. Measurement of the Degree of Integration (DI) 110
5-7. Degree of Integration (DI) Tables 111
5-8. Consideration of Different Sizes of Neighbourhoods 112
5-9. Discussion 115
5-10. Test for Significance of Differences 120
5-11. Social Logic of Space 121
5-12. Discussion 128
5-13. Summary 129

CHAPTER 6. SYNTACTIC ANALYSIS, INDOOR SPACE

6-1. Introduction 132
6-2. Introduction to House Designs 133
6-2-1. Land Shape and Size Factors 134
6-2-2. Location Factors 135
6-2-3. Directional Factor 137
6-2-4. Zoning By-Law Factors 140
6-2-5. Construction Factors 141
6-3. Social Analysis of Inner Spaces 143
6-3-1. Method and Samples 144
6-3-2. Discussion 153
6-4. Summary 158

PART III. PRAGMATIC ANALYSIS 162

CHAPTER 7. EMPIRICAL BASES

7-1. Introduction 163
7-2. Pilot Study 163
7-3. Structure of Questionnaire 165
7-4. Social Circumstances 165
7-5. Summary 166

CHAPTER 8. OBSERVED SIGNS

8-1. Introduction 167
8-2. Method and Tables 169
8-3. Comparative Discussion 171
8-4. Commonly Observed Signs 182
8-5. Summary 184

CHAPTER 9. PRAGMATIC ANALYSIS

9-1. Introduction 186

9-2. Verbal Based Degrees of Preferences 188
9-3. Preference for House Features and Neighbourhood Elements.189
9-4. Satisfaction with the Domain and Neighbourhood 200
9-5. Preference for Neighbourhood types 202
9-6. The Degree of Satisfaction on a Practical Base 205
9-7. Summary 212

PART IV. SEMANTIC ANALYSIS 216

CHAPTER 10. MEANING OF URBAN SIGNS

10-1. Introduction 217
10-2. Most Preferred Signs 219
10-3. Relativity of Selection 232
10-4. Meaning of Observed Signs 234
10-5. Comparison of Strength (Number) of Meanings 236
10-6. Associated Meanings 250
10-7. Discussion 252
10-7-1. Associated meanings with House Features 253
10-7-2. Associated meanings with Neighbourhood Elements 369
10-8. Summary 294

CHAPTER 11. CONCLUSION 297

11-1. Social Enhancement of House and Neighbourhood Layouts..299
11-2. Appreciation of Design Features 303
11-3. Meaningful Built Environment 304
11-4. Limitations of the Study 308

APPENDIX 310
GLOSSARY 345
BIBLIOGRAPHY 348
VITA 359

LIST OF TABLES

Table	Description	Page
2-1	Empires and dynasties governing Damascus from 3000 B.C. to today, their built environmental characteristics, and symbols	31
4-1	House design features for four house forms, T,A,D,E	85
4-2	Urban design elements for four neighbourhood types, T, A, D, and E	85
4-3	Kinds of house features and neighbourhood elements relative to different residential design types	88
4-4	House features and neighbourhood elements that typify newly built residences	89
5-1	A Traditional neighbourhood. Spaces' ID, their given and control values of spaces for Alamin Quarter	101
5-2	An Attached neighbourhood. Spaces' ID, their given and control values of spaces for Alshwika Quarter	102
5-3	A Detached neighbourhood. Spaces' ID, their given and control values of spaces for Alkassah Quarter	102
5-4	An Elevator neighbourhood. Spaces' ID, their given and control values of spaces for Aladawi Quarter	103
5-5	Number and percentage of low, moderate, and high control spaces for T,A,D, and E neighbourhoods	103
5-6	Alamin Quarter, a Traditional neighbourhood. Spaces' ID, their degree of Integration values (DI) and Real Degree of Integration values (RDI)	113
5-7	Alshwika Quarter, an Attached neighbourhood. Spaces' ID, their degree of Integration values (DI) and Real Degree of Integration values (RDI)	114
5-8	Alkassah Quarter, a Detached neighbourhood. Spaces' ID, their degree of Integration values (DI) and Real Degree of Integration values (RDI)	114
5-9	Aladawi Quarter, an Elevator neighbourhood. Spaces' ID, their degree of Integration values (DI) and Real Degree of Integration values (RDI)	115
5-10	Frequencies of RDI values and percentages of these frequencies in different neighbourhoods	116
5-11	Results of Mann-Whitney Test on C. and RDI values	120
5-12	Social logic signs from combined integration and control signs	122
5-13	Social logic signs of spaces with different widths	122
5-14	Street widths in relation to residential types and uses	123
5-15	Social logic of spaces for Alamin Quarter	124

Table	Description	Page
5-16	Social logic of spaces for Alshwika Quarter	125
5-17	Social logic of spaces for Alkassah Quarter	125
5-18	Social logic of spaces for Aladawi Quarter	126
6-1	Types of connection of different types of rooms in four different house forms: T,A,D, and E	159
8-1	Frequency of the observation of house features by 86 respondents in each residential type	170
8-2	Frequency of the observation of urban elements by 86 respondents in each residential type	170
8-3	Correlation Coefficients of observed house features between pairs of residential types	172
8-4	Correlation Coefficient of observed urban elements between pairs of residential types	172
8-5	Features with higher observability to residents of the T houses than to residents of A,D,E apartments	178
8-6	Features with higher observability to residents of A,D,E apartments than to residents of T houses	178
8-7	Elements with higher observability to residents of T neighbourhood than to resident of A,D,E neighbourhoods	181
8-8	Elements with higher observability to residents of A, D, and E neighbourhoods than to residents of T neighbourhoods	181
8-9,10	House features and neighbourhood elements strongly correlated with high observability	183
9-1	Sum of weighted values of people's preference for house features with similar degrees of preferability	190
9-2	Sum of weighted values of people's preference for house features with different degrees of preferability	191
9-3	Sum of weighted values of people's preference for neighbourhood elements with similar degrees of preferability	192
9-4	Sum of weighted values of people's preference for neighbourhood elements with different degrees of preferability	193
9-5	Results of Mann-Whitney Test on residents' preference for house features and neighbourhood elements	200
9-6	Sum of weighted values of inhabitants' level of satisfaction with their houses and neighbourhoods	201
9-7	Results of Mann-Whitney Test on residents' satisfaction with their houses and neighbourhoods	202
9-8	Sum of weighted preference frequencies	203

Table	Description	Page
9-9	Most to least preferred neighbourhood types as a living place	203
9-10	Results of Mann-Whitney Test on residents' preference for five different neighbourhood types	204
9-11	Percentages of inhabitants who had modified, were planned to, or wished to modify their houses and neighbourhoods to maintain or create T or M signification	206
9-12	Percentages of inhabitants of each house type who had modified or were planning to maintain or add traditional or modern house features	207
9-13	Percentages of inhabitants of each neighbourhood type who wished to modify, add, or maintain traditional or modern urban elements	210
9-14	Summary of results of different analyses of people's significant satisfaction with and preference for different urban signs	212
10-1	Features with higher preferences for residents of Traditional houses than for residents of Attached, Detached and Elevator apartments	225
10-2	Features with higher preference for residents living in Attached, Detached, and Elevator apartments than for residents of traditional houses	225
10-3	Elements highly preferred by residents of the Traditional neighbourhood, but showing low preference by residents of Attached, Detached and Elevator neighbourhoods	231
10-4	Elements highly preferred by residents of Attached, Detached, and Elevator neighbourhoods, but showing low preference by residents of the Traditional neighbourhood	231
10-5	Ranked house features from the most to the least preferred for all participants	232
10-6	Ranked neighbourhood elements from the most to the least preferred for all participants	233
10-7	Results of Mann-Whitney Test on numbers of strongly associated meanings by occupants of all residential areas to house features and neighbourhood elements	249
10-8,9	Frequencies of associated meanings for house features and neighbourhood elements	251

LIST OF FIGURES

Figure	Description	Page
1-1	Four principal changes in urban form, traditional to modern	9
2-1	Damascus natural setting	21
2-2	Isometric map of Damascus	22
2-3	Four successive stages of dwelling on the gradually dried out site of the lake that once was covering the site of Damascus	24
2-4	Direct airline and caravansary roads that connect Damascus with other countries	26
2-5	Damascene early development during Arameen Kingdom and Greek Empire	28
2-6	Damascene development during Roman and Byzantine Empires	28
2-7	Damascene development during Umaiyad and Nur al-din/Salah al-Din periods	29
2-8	Damascene morphology during the Salah al-Din period	29
2-9	Damascene development during Mamaluk and Ottoman periods	30
2-10,11	Damascene morphology during Mamaluk and Ottoman periods	30
2-12	Damascene morphology in the early 19th century	33
2-13	Damascene morphology today, 1992	33
2-14	Location of six traditional houses	36
2-15	Transitional movements from public zone to the private zone, the old city of Damascus	37
2-16	*A moqarnas* (honeycomb) of al-As'bahia Mosque	40
2-17	(a) Plan of attached residential units in Alshwika (b) Plan of detached residential units in Alkassah (c) Plan of elevator residential units in Aladawi	44 44 44
2-18	Directional overtakes of a traditional house and four apartment units	45
2-19	The idea of *hara* is transferred to modern Attached neighbourhood	46
2-20	Land uses of Damascus in 1992	49
2-21	Four types of residential areas, Traditional, Attached, Detached, and Elevator	52
3-1	Relationship between Saussure, Peirce, Morris, and Broadbent's semiotic components	66
3-2	The study framework according to Morris' tripartition of semiotics	68

Figure	Description	Page
3-3	Symmetrical relationship between A = inside and B = outside	69
3-4	Model of Geographical Semiotics as a Communication Process	71
3-5	Model of Communication System, Shannon and Weaver, 1967	72
3-6	Simplified Bjorklund's model of "Behaviour as a Spatial Search", 1983	74
3-7	Human Built Environment Interaction model	76
3-8	The Geographical Semiotic Process	78
4-1	Numerical differences in kinds of house features and urban elements between pairs of residential types	88
5-1	Space X gives its neighbouring space X1 a share of 1	97
5-2	Space X gives each of its neighbouring spaces X1,...,X5 a share of 1/5	97
5-3	Proposed study to illustrate the computation of the degree of control (C.Value)	98
5-4	ID numbers assigned for segments of street open spaces of T,A,D, and E neighbourhoods	99
5-5	Three ways of connecting street X with street X1	100
5-6	Minimum connections with three types of streets	104
5-7	Spaces with 3 different levels of controllability for T,A,D, and E	106
5-8	(a) The use of Alhjjaj street, a semi-public street, and (b) the use of inner courtyard of Alassbahea mosque, a private space, as a semi-private or public space	109
5-9	The use of steel poles (a) in Alshwika neighbourhood and (b) in Alkassah neighbourhoods	109
5-10	Direct connections of space X with spaces X1, X2, X3, and X4	111
5-11	Indirect connections of space X with spaces X1, X2, X3, and X4	111
5-12	Spaces with 3 different levels of integration for T,A,D, and E	118
5-13	Spaces with 3 different types of social logic for T,A,D, and E	127
6-1	Four examples of room layouts in different types of residential areas	136
6-2	Primary locational relationships among house inner spaces	137

Figure	Description	Page
6-3	Aerial view of the old city	139
6-4	Plan set of ten Traditional houses, their inner space connective networks, and integration values	145
6-5	Plan set of sixteen Attached apartment buildings, their inner space connective networks, and integration values	148
6-6	Plan set of eight Detached apartment buildings, their inner space connective networks, and integration values	150
6-7	Plan set of eleven Elevator apartments (in 3 buildings), their inner space connective networks, and integration values	151
8-1 to 6	Paired comparisons of the frequency of observation of house features by 86 residents of each house type, T,A,D, and E	174
8-7 to 12	Paired comparisons of the frequency of observation of urban elements by 86 residents of each neighbourhood type, T,A,D, and E	176
10-1	Scaled house features according to the sum of weighted values of the level of preference talked about by residents	220
10-2	Scaled neighbourhood elements according to the sum of weighted values of the level of preference talked about by residents	222
10-3 to 8	Paired comparison by levels of preference for all house features that residents talked about	225
10-9 to 14	Paired comparison by levels of preference for all neighbourhood elements that residents talked about	227
10-15 to 18	Degrees of associated meanings with T,A,D, and E house features	237
10-19 to 22	Degrees of associated meanings with T,A,D, and E neighbourhood elements	239
10-23,24	Comparison for T,A,D, and E house features for the number of high to moderate associated meanings	243
10-25,26	Comparison for T,A,D, and E neighbourhood elements for the number of high to moderate associated meanings	245
10-27	Traditional decorated ceiling	256
10-28	Traditional house in Old Damascus	258
10-29	The *Iwan* is part of the inner courtyard	263
10-30	Plant in the inner courtyard	264
10-31	Fountain inside the inner courtyard	264
10-32	The *Mashraka* in the upper floor of a traditional house	267

Figure	Description	Page
10-33	Balconies in an elevator apartment building	267
10-34	Solicitor selling green pistachio nuts in a semi-public street. Alkarab, Old Damascus	271
10-35	Crowded traditional strip commercial street	271
10-36	Plaza, central commercial area, within an elevator neighbourhood	274
10-37	A central commercial area in a public street of a Detached neighbourhood	274
10-38	Students, identified by school uniform	276
10-39	The school sign	276
10-41	Altiftafia Mosque in a Traditional neighbourhood	278
10-41	Almansor Mosque in an Attached residential area	278
10-42	Drinking fountain in an Attached neighbourhood	280
10-43	Three different street types	283
10-44	A small park and a sidewalk in a Detached neighbourhood	288
10-45	Residents of Detached neighbourhood use the semi-public street for parking	290
10-46	Former garage now transformed into a corner store	290
10-47	Verbal signs	293
10-48	Public bath in Alsalihia	339
10-49	Views of fences of elevator buildings	342

LIST OF APPENDICES:

Appendix	Description	Page
A	Pilot study questionnaire	310
B	Conduct of 300 interviews	310
C	Adult urban behaviour survey	312
D	Social circumstances of inhabitants of four neighbourhoods	319
E	Procedures for weighting and summing frequencies obtained from a five-point scale questionnaire	323
F	Frequency values and the sum of weighted values of people's preference for neighbourhood elements	324
G	Frequency tables of residents' satisfaction with their houses and neighbourhoods	325
H	Frequency table and percentages of inhabitants' preference for five neighbourhood types	325
I	Sample of socio-demographic attributes related to residential preference	326
J	Two samples of frequency values and the sum of weighted values of people's preference for each house design feature	329
K	Traditional house example, percentages of frequently selected meanings for each house feature	330
L	Common values and four levels of associated meanings with each house type and neighbourhood area	331
M	Semantic discussion of some house features	332
N	Semantic discussion of some neighbourhood elements	334

A GEOGRAPHICAL SEMIOTIC ANALYSIS OF FOUR DAMASCENE RESIDENTIAL NEIGHBOURHOODS

Spatial Design & Behavioural Relations

PART I. INTRODUCTION

CHAPTER 1. PROBLEMS AND HYPOTHESES

1-1. Introduction

> "....the city is the form and symbol of an integrated social relationship: it is the seat of the temple, the market, the hall of justice, the academy of learning. Here in the city the goods of civilization are multiplied and manifolded; here is where human experience is transformed into viable signs, symbols, patterns of conduct, systems of order. Here is where the issues of civilization are focused: here, too, ritual passes on occasion into the active drama of a fully differentiated and self-conscious society".
> (Mumford,1958,p.3)

As Mumford so powerfully stated, the city is a set of built elements whose relative location, forms, and functions provide information about activities of the inhabitants and other users. In this view, cities are constructed as enduring environments in which a broad range of human endeavour are housed and integrated. Homes, streets, and neighbourhoods are among the basic integrated components of cities. Cities therefore can be called social interactive-spaces that convey information about the forms (objects, buildings), relative location of things, human activities, and symbols.

For example, in Damascus, newly built schools have similar forms. Each school is a 3-to-4 story concrete building with uniform facades, horizontal rows of windows separated vertically by projected columns. Buildings are surrounded by playgrounds edged by solid high fences (3 metres) to separate the inside from the outside. This building design represents an environment free of distraction by the lack of ornamentation

and fancy architecture.[1] The high fence is an urban element that restricts students from engaging in street activities, even visually. The form of new schools, thus, is intended to create a learning atmosphere sheltered from possible inside and outside distractions.

At the front side of the fence a big steel door (5 metres) forms the main entrance to the school. And, at the top of that door a sign indicates the name of the school and the level of education it represents. School main doors, just like main doors of stadiums and movie theatres, are built to allow large crowds to move in or out easily. So, the presentation of big doors is a sign of the existence of some sort of mass activities inside. The size and form of the door also signify its use. Students are expected to enter school from the big door, while faculty members have their special, lightly decorated entrance, built from wood, as a prestigious sign of the users. The faculty door is relatively small corresponding to the number of the users.

Classrooms commonly consist of rows of school tables facing a green board and the teacher's table. Its arrangement of furnishings represents another controlled environment where all students sit facing one direction and are expected to listen to the teacher and talk only when allowed. The arrangement of tables in such a way signifies the traditional teaching system.

Contained in the design form of buildings and its observed function is a language readily understood by those familiar with that system. The built form exemplified by the school and its interior apparatus are ones that have been articulated by Damascenes as part of Syrian culture, and so

[1] One can also argue that the reason for the simple form of new schools is attributed to the small budget spent on school appearances.

this form becomes a sign of such activities[2].

Cities as information systems consist of complex geographical artifacts formed by human effort created from traditions of built forms and from established social relations and cognitively formed behavioural patterns. Habitats are constructed and modified as a reflection of what each society believes, experiences, and activates. Major distinctive traditions in built forms and behaviours are known to us as Islamic, Western, Chinese, and Indian. Each of these traditions incorporates built elements and learned ways of doing things based on experience from its past. Each of the built environment traditions contains form, designs, and symbols that communicate basic information to its users about what is intended and what is prohibited. Users discern information from their interactions with other people in environmental settings, combined with their personal/family interests and intentions.

Bjorklund (1992) describes cities as built environments representing ongoing outcomes of human spatial behaviour and information within cultural systems. According to her, the city is part of the ongoing outcome of organized activity including whatever is maintained from the past, operates at the present time, and projects toward the future. Her statement emphasizes the dynamic aspect of the urban environment as a transactional arena for human activities. The city is not only forms, symbols and social activity-spaces. It is also a behaviourial environment; human beings are the energy that keeps the city alive and adaptive to changing needs of inhabitants.

Built environment consists of materials, (concrete, glass, wood, steel, and asphalt), energy systems (water, waste, and communication

---

[2] Sign is any thing that symbolizes something else (Eco, 1976), while symbol is a material object representing something often immaterial, emblem, token, or sign that has to be learned as meaning something within a particular cultural context (Peirce, 1958).

systems), and complex social interaction systems (domestic facilities, shopping, and other livelihood activities). The term "urban environment", which may be used to refer to a unitary phenomenon, in fact consists of innumerable households, streets, and neighbourhoods in which the activities of peoples unfold. Urban environment therefore refers to the constructed places where there is shared domestic, social, and livelihood experience.

The term human spatial behaviour refers to the action and interaction of human beings within the city's constituent parts. Acquiring information from the built environment is crucial to effective human spatial behaviour. Acquisition of information is derived from perceiving and reading clues cognitively to interpret the built environment and subsequently using this information.

Cit'es' forms and functions are never static. Their older parts, where they are retained, are transformed by the dynamics of their culture. Built up areas expand. New neighbourhoods and arteries are designed as attached parts via vehicular and pedestrian roadways and communication system. Homes, streets, and neighbourhoods differ from one another, but are hierarchically connected realms. Home is a familiar place where the family lives. As a geographical world, home represents self, family, and societal culture. As Greenbie put it:

> The forms and shapes, the symbols and meanings we put forth and read back from the facades [*and other features*] of our homes are expressions of our individual personalities combined with those of our class, culture, and time..... Houses that are really lived in for long do not look alike, any more than do the people who live in them.
>
> (Greenbie, 1981, p.4)

Greenbie's statement anchors on the individualistic personality of residents expressed by house features. House layout, as expressed by arrangement of rooms, ordering of furnishings and style of decoration (ceilings, walls, closets, etc.) are often modified to express changing

social connections, social-religious ideals, and social intentions. However individualistic they are, house designs and decorations generally follow cultural norms and social conventions. Use of typical colours, designs, and arrangements is a way of expressing belonging to the group, and adherence to a set of beliefs and ideology. Thus, for example, throughout Middle East cities, the traditional domestic spatial world represents Islamic beliefs and values, not Chinese or Western.

Beyond the interior of houses and the information they convey are street and neighbourhood realms. Outside the home, the streetscape, including observed activities of people, provides abundant information about a range of possibilities related to domestic life, social life, and livelihood. This public territory is represented by a multitude of signs for use as guides for behaviour in that realm. Signs consist of at least three categories: 1) Built forms and infrastructure to represent different activities or functions, such as buildings, roads, sidewalks, bus stops, and litter baskets, 2) written signs, such as "do not enter", "do not smoke", and "school crossing", and 3) pictorial signs and symbols to indicate expected behaviour, hazards, constraints, and opportunities. In the case of Damascus, minarets are not only manifestations of mosques (sacred and social places), but also landmarks for locating public washrooms and drinking fountains, conventionally built as parts of mosques. These four characteristic types of spatial signs provide information people use in directing their lives, interaction with others, and sharing experience. This is called <u>geographical semiotics</u>.

In the street, people share the space with others, moving as individuals, in pairs or small groups and appear to be friends, surrounded by strangers. They move along designated routes, pause at certain places, affix attention on the appropriate things around them, and avert their gaze at whatever is prohibited. Learned social behaviours are related to the sets of environments through which users pass on their daily and

occasional rounds.

Action and interaction among people are shaped by the time-spatial relations constructed in the built environment. For example, in Damascus, the time for people to carry on their shopping activities is tied to the opening hours of the commercial establishments. One does not expect to see crowd of people after 9 pm in the city centre. Also, weekend shop closing reveals information about the participant community, as Muslims close on Fridays, Christians close on Sundays, and Jews close from Friday noon to Sunday noon. Shopping activities are therefore time-spatially expressed and spatially communicated by closing/opening steel shutters on store fronts relative to the practice of the religious community to which owner-operators belong. Consumers must search along streets for shopping opportunities or be knowledgeable of different local conventions regarding operating hours.

1-2: Old and New Built Environments

Through people's action and interaction with the built environment, different traditions are formed. Traditional residential areas in Islamic cities emphasize privacy, the religious ideal of heaven, and controlled male-female interaction. Inner courtyards, for example, built in the centre of houses, provide residents the opportunity, especially women, to move freely without intrusion. Inner courtyards are also typical private features traditionally associated with "heaven" by the presence of natural features: trees, plants, water, and sky.

When people are confronted with new houses and urban places, they tend to change them to fit their image, values, and needs. Extending the living space by closing balconies, changing the colour of facades, or fencing off properties, are among the ways residents deal with residential environments that do not conform to traditions. They may complain of traffic hazards in a semi-public street and ask the city to transform it

into a pedestrian road. Whatever changes are made, neighbourhoods become reflections of the residents' ideal of urban place. As mentioned earlier, cities are dynamic forms that continuously change to comply with varying needs of urban occupants. Forms of changes are related to design possibilities that are known to the society. The discovery of new technology, the development of design principles, and the exposure to new urban and house designs, provide opportunities for novel forms to appear.

Increasingly, cities with rich culturally-based architectural traditions are confronted with partially or entirely new exogenous designs. These new designs and ideas are referred to as modern, foreign, or international. Modern built urban environments challenge tradition. Emergent modern urban environments contain features drawn from many historical periods and traditions: American, European, Middle Eastern, etc. Designers and developers make cities eclectic by selective combination of features from other traditions and other historic periods. Individual architects and builders adopt ideas drawn from other parts of the world. Others imitate them. The Encyclopedia of 20th-Century Architecture (Lampugnani, 1985) gives many examples of architects whose creative designs and theories have inspired architects and builders throughout the world, such as LeCorbusier (Switzerland), Mies van der Rohe (Germany), Frank Lloyd Wright (U.S.A.), Walter Gropius (Germany), Kenzo Tange (Japan), and Hassan Fat'hi (Egypt). These among many others are copied, imitated, and integrated with local or traditional styles.

Transmission of ideas from science, art, and technologies have penetrated political, social, and cultural boundaries for adoption on an interactional scale. According to Rehawi (1979) localities are no longer bound to traditional technology, local material, and indigenous architectural concepts. Modern technologies of construction and layout are widely applied and are progressively replacing older technologies. As ancient cities undergo modernization, traditional house and institutional

architecture, street layout, and neighbourhood designs are modified. Building styles and neighbourhood layouts seldom continue without replacement by new housing and different neighbourhood designs, whether in Syria or elsewhere.

The impact of exogenous forms, layout, and organization on traditional style, values, and patterns of behaviour is essentially unknown. In what ways are new designs and their layouts successful or failing? How do new styles of housing and neighbourhood designs alter human behaviour? Do people regard these different forms and arrangements of features comprise new environments with satisfaction or dissatisfaction? These are critical questions examined by this dissertation.

1-3. Goals of the Study

The goals of this study are 1) to describe and offer geographical semiotic analyses of different building designs, street systems, and neighbourhood layouts for three types of residential environments in Damascus; 2) to uncover social aspects and meanings presented in different residential types; and 3) to document residents' satisfaction and dissatisfaction with their houses and neighbourhoods. The three types of residential environment are: 1) Traditional design, with layout, context, and meanings, based on the long-standing experience of local people, local building materials, and knowledge of the physical environment; 2) Modern designs, with layouts and organization, based on international technologies and design interests with little reference to local tradition and conditions (see Figure 1-1), exemplified by Detached walk-up and Elevator apartment neighbourhoods; and 3) Transitional design, consisting of mixed indigenous and exogenous design forms and layouts, exemplified by Attached walk-up apartment neighbourhoods.

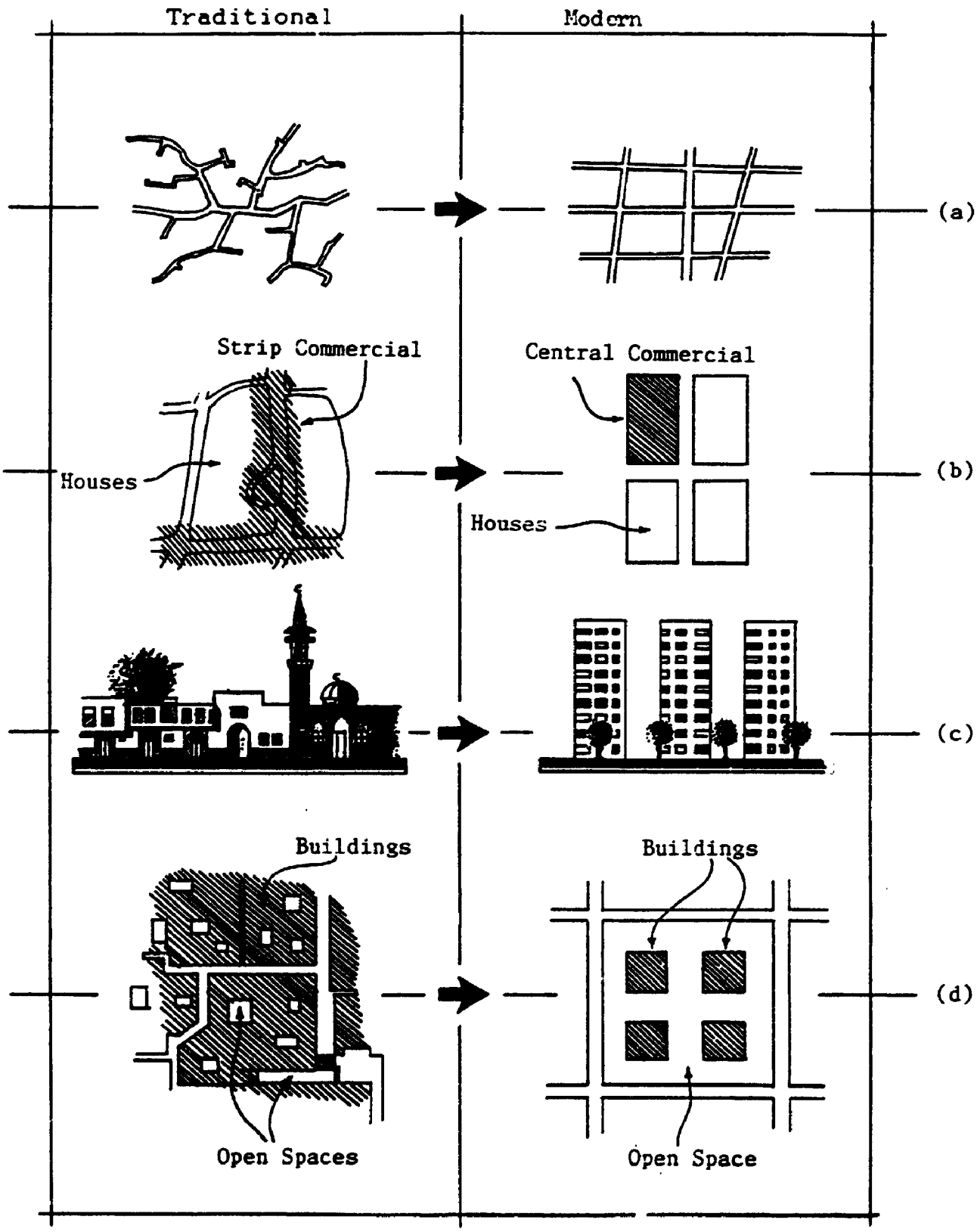


Figure 1-1: Four principal changes in urban form, traditional to modern. These are: (a) patterns of streets, (b) connections among different functions, (c) sky lines, and (d) spatial patterns (Ferwati, 1988).

1-4. Questions and Hypotheses

To achieve the goals of the study, a set of questions are raised, which form the basis for a more specific set of hypotheses.

1. What are the fundamental design differences (representing spatial relationships for human activities) between indigenous architectural tradition and international modern forms?

2. What are the social aspects or meanings represented in spatial and architectural structures in indigenous traditional and modern international forms?

3. Are residents, who live in traditionally designed households and neighbourhoods and those who live in non-traditionally designed places, satisfied with their built environments?

4. What are the critical design features that explain differences in the levels of satisfaction and community participation?

5. Do all residential design features and layouts have similar value or preference to their occupants?

Question 1 addresses two aspects of built environments: first, the effectiveness (degree of controllability of spaces, and integration among spaces) of traditional, transitional, and modern built environments; second, the relationships among representational elements of architectural and urban features in the built environment. Both aspects are important as they represent communicative elements understood and accepted by the inhabitants.

Question 2 relates to social structures and meanings represented by the physical forms. This helps to diagnose the relationship between physical structures (house and urban designs) and social forms (private and public spaces). These considerations, therefore, suggest the desirability of analyzing both the effectiveness of built environments

(question 1) and the meanings of built environmental elements (question 2) that are combined to form houses, street systems, and neighbourhoods. The traditional built environment is a collective consciousness continuum of form/function elements developed through time in response to ideology and values, ways of doing things, and social structure. In contrast, the modern built environment contains design and scale elements derived from indigenous and exogenous ideologies. In other words, modern forms have not undergone the "time-space culture test" associated with signs, forms, and social activity spaces.

Therefore, in addition to considerations raised from questions 1 and 2, examination of residents' appreciation of different built environment types is important. Questions 3, 4, and 5 focus on households' preference and satisfaction with their built environment.

Finally, two interesting subordinate questions pertain to question 5: (a) Do the modern structures support social order? and (b) Are there new social forms that necessitate creation of new spatial designs?

For assessment of design and neighbourhood layout, differences among four different types of neighbourhoods, and residents' preference and satisfaction with their built environments, four principal hypotheses are formulated. Each is stated in the null form.

Hypotheses

I. There are no significant differences in the degree of effective connectivity (control and integration) of (outer/inner) spaces among the different types of residential areas of different architectural design and urban layout (traditional or modern).

II. There are no significant differences in kind and number of actual/observed house features and urban elements among the four residential areas.

III. There are no significant differences in the degree of preference and satisfaction with urban signs (of houses, neighbourhood) among residents of the four types of residential areas.

IV. The meanings attached to elements of house and neighbourhood by inhabitants of different residential types are not affected by the architectural design and urban layout.

With regard to the previous set of questions and hypotheses, the goals of the study can be restated more specifically. It is the study of the differences in meanings and nature of four different types of residential environments with respect to assessment of their effectiveness/ ineffectiveness: (1) as spaces that occupants can control to meet social expectations for security and belonging to the community; (2) as contributors to the social integration of the society, as demonstrated by the behavioral patterns (preferences and satisfactions) of their inhabitants.

1-5. Case Study: Damascus

To test the above hypotheses, an analytical approach is developed for a case study of different types of residential environments in Damascus. A Damascus case study presents a good opportunity to test these ideas because: 1) it consists of neighbourhoods ranging in architectural style from traditional through transitional to modern; 2) there are identifiable problems relatable to design, layout, and context differences; 3) Damascus is the oldest continuously occupied city in the world as its origin can be documented to 3000 BC (Zouhdi, 1982; Sebano, 1985).

Historical development of the city is marked by two important periods: the pre-Islamic and Islamic. Each period created monumental buildings that contributed to shaping its architectural character (Perwati

1988). Thus, Damascus provides an opportunity to examine localities where urban changes in traditional cities (especially Middle Eastern cities) are regularly experienced. Within Damascus four different types of residential environments are presented: the traditional and three modern types whose characters are to be discussed in Chapter 2.

1-6. STUDY APPROACH

Analysis and measurement of both effectiveness and meanings of four types of built residential environment in Damascus are pursued using ideas from three disciplines: geography, architecture, and semiotics. The development of the thesis unites these three disciplinary perspectives by use of geographical semiotic analyses. For purposes of the study a brief statement of architecture, geography, and semiotics follows.

The geographical approach concerns the spatial relationships among different activities and elements in the built environment (Abler, Adams, and Gould, 1971). Residential/commercial areas, traditional/ modern areas, public/private spaces, and integration/control are urban elements with designated activities commonly constructed and spatially integrated. These elements form different scales of environments ranging from internal spaces of houses, streets, to neighbourhoods that are principal units of geographical concern in this study.

Architecture addresses interior and exterior design features (forms) and layout of buildings for purposes of accommodating inhabitants' dwelling needs, social interaction, and daily activities. There are two systems of architecture 1) vernacular architecture which uses indigenous (local/traditional) design principles. Builders may be hired to design and construct public and private buildings. "In vernacular design the image is clear and shared, and the matching is relatively straight forward" (Rapoport, 1977, p.17). 2) Professional architectures are developed by licensed architects who are (theoretically) acquainted with

other traditions or multiple exogenous (foreign/international) design principles. With such variety, their images, therefore, are relatively idiosyncratic, unshared, and sometimes antagonistic.[3]

Geographical semiotics provides an approach which, in effect, bridges geographical and architectural approaches (Bjorklund, 1986). The basic geographical semiotic premise is that elements of the built environment represent signs that convey meanings. These meanings are associated with these elements through urban experiences (Krampen, 1979). With this premise, built environments are used communicatively to signify expectations, goals, interests, etc. The process of using the built environment as a system of signs is accomplished objectively, intersubjectively, and subjectively (Bjorklund, 1992).

1-7. CONCEPTUAL FRAMEWORK

The preceding and following discussions introduce seven main terms: 1) communication, 2) meaning, 3) effectiveness, 4) control, 5) integration, 6) satisfaction, and 7) preference. As these terms are basic to this research, it is important to define them and their linkages to each other.

This study refers to communication as the ability to understand and use signs presented in the built environment. This takes place through words, symbols, use of colour, arrangement and design features, or other clues that differentiate houses, mosques, schools, and shopping areas from one another. The built environment design element (as signs) represent meanings that can be interpreted by the residents. Effectiveness of the built environment relates directly to the way residents interpret it in relation to their interests and expectations. These may be interpreted

---

[3] International schools of design incorporate many modern and postmodern features in various combinations. Modern architecture tends to create distinctive built forms, while postmodernists emphasize the necessity to incorporate indigenous design features with exogenous modern design structures and urban forms.

negatively or affirmatively. Effectiveness depends on the possibility of occupants having control of space, and integration with other inhabitants.

Integration has several meanings. One, used by sociologists, refers to the degree of propinquity or acceptance among people, especially among those of different age, race, and belief (Singer, 1964). The second, used by environmental and social psychologists, refers to the effect of propinquity on social relationships. A physical structure simultaneously facilitates social relationships while retaining the required domestic privacy to create a high level of integration among people (Gergen and Gergen 1987, p 375). This research adopts a third meaning of integration as the social-spatial relation between a space with other spaces in the same settlement (Hillier and Hanson, 1984). This is considered within the basic postulate that social structure is represented in the built environment.

Gold (1980) defines satisfaction as "the gratification or pleasure derived from particular living environments".[4] Dissatisfaction with houses features or neighbourhood elements is expressed by a spatial tendency for occupants to modify (partially or completely) the spatial pattern, or moving to better residential areas.

> "Study of individual changes of residence provides many insights into the ways in which the broader urban structure constrains individual behaviour [affects the degree of satisfaction]. However, if we focus our attention at a different scale we can see these same changes of residence also modify that broader structure".
> (Moore,1972,p.1)

Rapoport (1977) defines choice or preference as the selection (and evaluation) of alternative spatial opportunities generated by certain criteria that fit the society's norms. Some alternatives may not be considered as relevant to making a choice. Choice always is limited by

---

[4] This concept is used by many western researchers to measure or understand urban residential behaviour. Michelson (1977) studies the households' satisfaction in Toronto, Canada; Onibokun (1974) studies tenants' satisfaction; Fried and Gleicher (1961) studies the satisfaction with urban slums.

cultural and physical constraints in any setting. This definition indicates the difference between opportunity and preference. Thus, opportunity consists of all the spatial alternatives which exist for an individual or a group.[5]

1-9. Organization of the Study

The study has ten chapters organized into four parts, each part pertains to a certain goal. Part I has three chapters. Chapter 1 introduces the problems and the goals of the study. This research uses descriptive methods to discuss: 1) the degree of effectiveness (expressed satisfaction / preference), 2) satisfaction, preference, and kinds of meanings that contribute to the goal of assessing effectiveness of house designs, streets, and neighbourhoods, and 3) the meaning(s) of different types of design features and layout of residential areas in Damascus.

Chapter 2 discusses the geographical characteristics of Damascus and its urban morphology. Four residential areas with different house designs and neighbourhood layouts are selected as samples of the built environment to represent old and new residential environments, and a hybrid form between them.

Chapter 3 discusses semiotic concepts and introduces a model of "human-built environment interaction". It brings together ideas of effective physical structure, meanings of urban elements, and inhabitants' attitudes toward house designs and urban elements.

The three semiotic components: syntactics, pragmatics, and semantics (Morris, 1964) are appropriate to examine the hypotheses of this study. The individual chapters of Parts II, III, and IV follow the sequence of: 1) data collection; 2) methods of analysis; 3) tabulation; 4) discussion

[5] Rushton (1981) referred to both spatial opportunity and personal preference functions in his spatial choice model.

of tables; and 5) summary of findings, including a review of the outcome of the tested hypotheses. Discussion sections are accompanied with illustrations as required.

Part II consists of Chapters 4, 5, and 6. Chapter 4 studies the actual features/elements that characterize house and urban form. It presents measures of the degree of diversity of house and urban signs among the traditional and modern areas. Two inventory lists (tables) are constructed to indicate feature signs that constitute the house structure and residential neighbourhood design of the four selected neighbourhoods. These two sign tables, one for house features and the other for residential neighbourhood design elements, are used in Parts III and IV to analyze pragmatic and semantic meanings. Chapter 4, also, discusses what features are gained and lost in the four neighbourhood types.

Chapters 5 and 6 analyze and discuss the syntactic meaning of physical structures of the four selected neighbourhoods. They test the main hypothesis that there is no significant difference in the effective connectivity (control and integration) of (outer/inner) spaces among residential areas of different architectural designs and urban layouts (traditional or modern).

Use of the geographic theoretic analysis, developed by Hillier and Hanson (1984), enables us to read the syntactic relationship of route spaces (travel paths) for each type of urban neighbourhood design and house layout. Route maps are constructed to compare the four neighbourhoods. It classifies route systems into three types: (a) public space (as high integrated and low controlled spaces), (b) semi-public street (as moderately private and secure spaces), and (c) semi-private space (as private and secure spaces).

Part III has Chapters 7, 8, and 9. It deals with pragmatic analysis. Chapter 7 discusses data collection. Pragmatic analysis, like semantic analysis, is based on data collection from inhabitants about their images of their built environment (preference, satisfaction, and meanings). However, before considering the actual evidence (house features and urban elements) to be a "sign", it must be established as an observed object (or construct) of inhabitants' mental images. Data collection in Parts III and IV was based on face-to-face interviews of 344 adult inhabitants of Damascus (male and female) of different social characteristics: for example, single/married/divorced, family size, occupation, and education levels. Chapter 8 tests the subordinate hypothesis that there is no significant difference in kind and number of observed house features and urban elements among the four residential areas.

After identifying observed signs of residence, Chapter 9 measures the relation of these signs to actual behaviourial patterns of people. It assesses whether peoples' attitudes towards house features and neighbourhood elements are positive or negative. Identification of significant differences among peoples' images of house features and neighbourhood elements within and among the four types of selected residential areas takes into account people's preference. The hypothesis is tested that there is no significant difference in the degree of preference and satisfaction with urban signs (of houses and neighbourhood) among residents of the four types of the residential areas.

In Part IV (Semantics), Chapter 10 decodes meanings of house and urban signs. This is conducted in accordance with interpretation of signs by residents. It was implemented by a questionnaire-survey administer to occupants in each selected residential environment. The hypothesis is tested that the meanings attached to urban signs (of house and neighbourhood) by inhabitants of different residential types are affected by the architectural design and urban layout. Thus, this section defines

more completely the communication system introduced in Part I, Chapter 3.

The Conclusion (Chapter 11) summarizes the results from previous chapters. It identifies effectiveness of built forms and house designs in terms of connectedness of spaces, satisfaction, preference, and meanings of signs for the residents of Damascus.

CHAPTER 2. DAMASCUS, LOCATIONAL CHARACTERISTICS AND URBAN MORPHOLOGY

1-1. Introduction

For 3000 years, the oasis of Damascus has been an attractive place. Aarmeen, Greek, Roman, and Muslim all created monuments that expressed their achievements, values, and beliefs. The locational characteristics of Damascus contribute to its importance. Situated on the edge of the desert and an oasis makes a profound impression on inhabitants, especially from the west entrance of the city, the Rab'wa Valley. Northwest of the city rises Kassion Mountain (an ancient name meaning a bold mountain). Its name symbolizes the long history of the old city, Damascus (see Figure 2-1). From an upper slope of this mountain, a panoramic view reveals a powerful contrast between natural setting and built environment. The centre of the city, marked by the huge building of the Umaiyad Mosque, focuses the attention of the beholder. Around the mosque, the old city is distinctly perceived as a compact piece dotted by squares (inner courtyards). Beyond, where formerly one found green cropland, newly built areas clearly appear with large streets, tall buildings, and balconies.

This section briefly introduces Damascus: its location, climate, urban origin and morphology, characteristic built environments, and cultural history. Basic Islamic Middle Eastern cultural elements and the urban forms associated with traditional and modern styles are also described. An overview is provided for four different urban forms. Residential areas (Traditional houses, Attached apartments, Detached apartment, and Elevator apartment neighbourhoods) are identified on an isometric map of Damascus (see Figure 2-2).

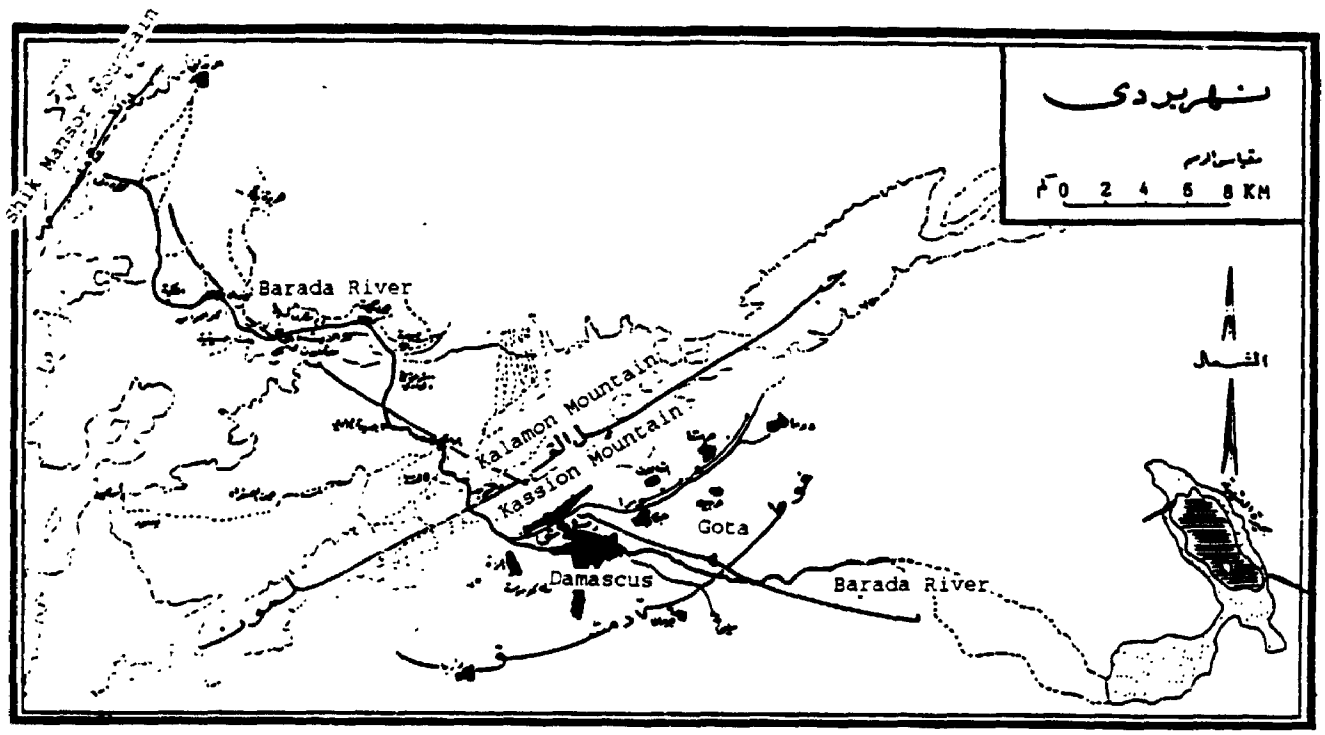


Figure 2-1: Damascene natural setting: Barada River, Kalamon Mountain, and Gota. (Source:Kaier, 1979, p.84)

2-2. Locational Characteristics

Damascus is located at 36° East Longitude and 33° North Latitude, about 700 metres above sea level. The Kalamon Mountains, of which Kassion Mountain is a part, extends from the northern part of the country to the southern, paralleling the east shore of the Mediterranean Sea. The Kalamon Mountain shields Damascus in the northwest and south from severe weather and reduces rain (Hartmann, 1913, p.902). Precipitation on Shik Mansor Mountain is an important source of water for the city (Figure 2-1). Shik Mansor Mountain also forms the border with Lebanon. From the east side of Shik Mansor Mountain the Barada River flows towards Damascus. It penetrates Damascus through seven man-diverted streams. Barada River feeds an oasis on which the city has developed. This oasis, Gota, surrounds now the eastern and southern parts of the city. It makes Damascus an attractive place.

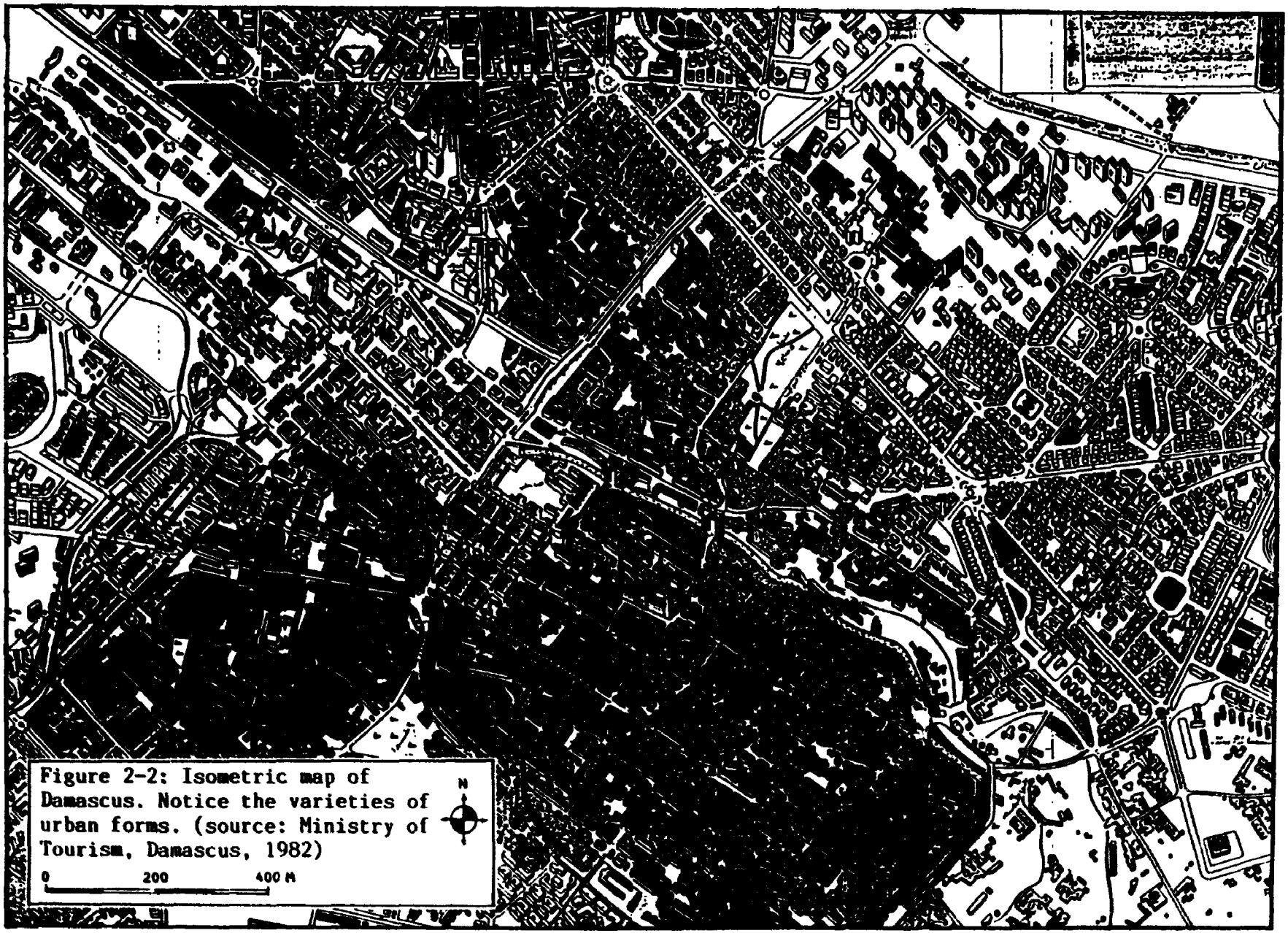


Figure 2-2: Isometric map of Damascus. Notice the varieties of urban forms. (source: Ministry of Tourism, Damascus, 1982)

However, on its northeastern and eastern sides, Damascus is exposed to strong winds that produce the coldest, driest, and hottest days for the city. In the summer, there are dust storms lasting about four to five days from the Syro-Arabic desert. West winds cause rain over three to six months (from November to April) and snow may fall three to four days each year. The average wind speed is 12.7 Km/h. The peak velocities 16.9 to 18.0 Km/h are in June and July; and the lowest occurs in the winter, 7.6 Km/h. The average amount of rain the city receives yearly ranges from 250 to 300 millimetres (Kaier, 1979).

Actually, Damascus has two seasons: a clear summer and a cloudy winter, which begin respectively in May and October. There is great variation in temperature between the seasons, with an average of 7.3° C. in January to 27° C. in July. The yearly average temperature is 17.6° C. At 33-36 percent, the humidity is low in the summer, especially in June and July; but in December it reaches 71 percent. The sun shines in Damascus for an average of 9.3 hours/day. The maximum sunshine occurs during the month of June, when it shines for 12.8 hours/day, and the minimum in December, shining for only 5.5 hours/day. Overall, Damascus has a clear sky and moderate temperature.

2-3. Origin of the City

Origins of Damascus are traceable to the edge of an ancient lake situated at the foot of Haramon Mountain. Cave sites above its high water marks it as an ancient habitation. As water levels of the lake gradually decreased, cave-dwellers moved down close to the edge of the lake. These movements are classified by Sebanc (1985, pp. 17-19) into four main periods (see Figure 2-3): 1) From 50,000 to 10,000 B.C., people inhabited the Ua'broud area and its surroundings, 1,500-1,300 meters above sea level. 2) From 10,000 to 7000 B.C., people inhabited Ma'lola and its surroundings, 1,300-900 meters above sea level. 3) From 7000 to 6000 B.C., people inhabited Sed'naia, Barza and their surroundings, 900-650

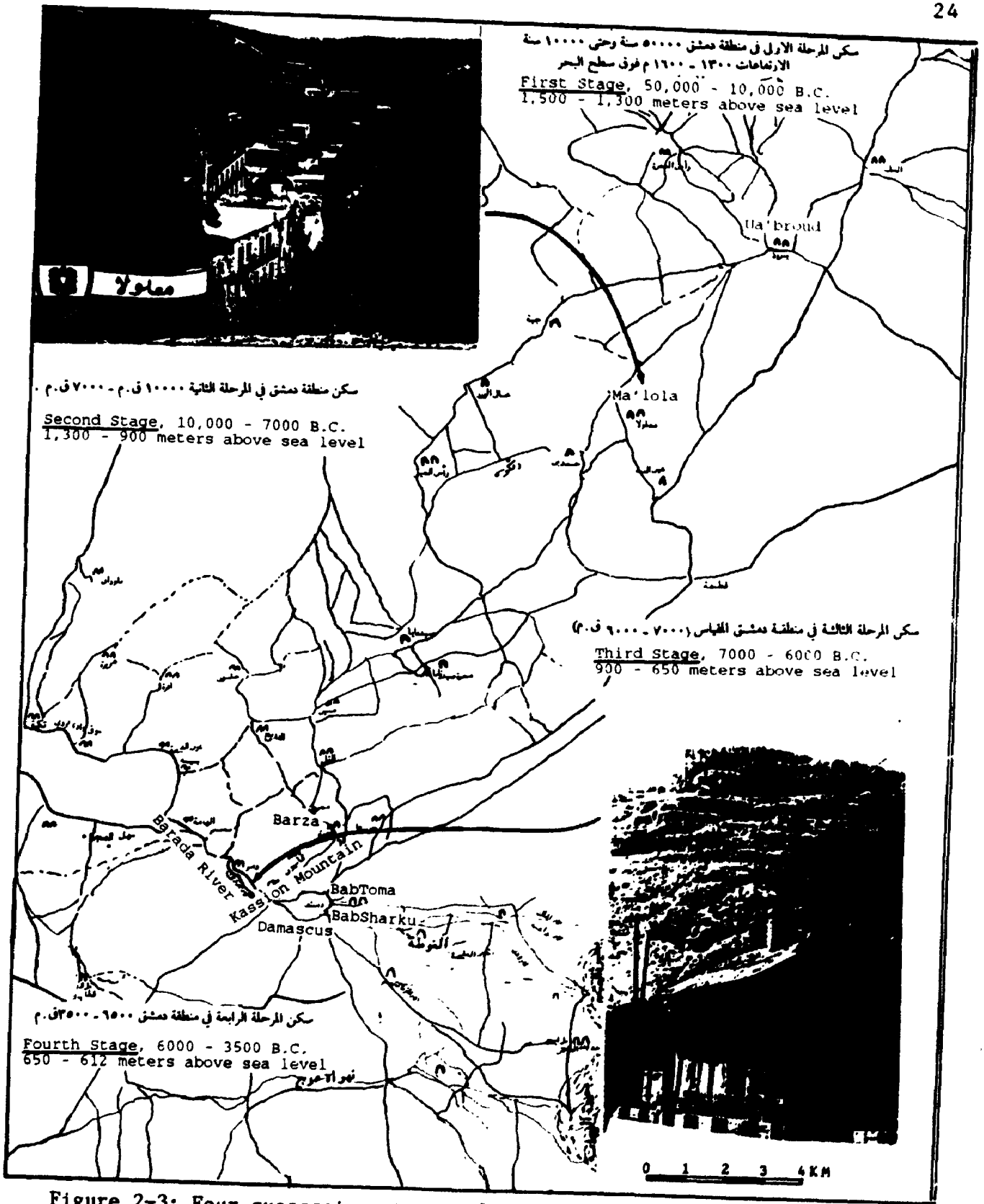


Figure 2-3: Four successive stages of dwelling the gradually dried-out site of the lake that once was covering the site of Damascus. This map is a combination of four maps presented by Sebano, 1985.

meters above sea level. 4) In this period, from 6000 to 3500 B.C., people's lives had changed dramatically as the lake dried out. They moved on to the fertile lake bottom land, east of Bab-Toma/Bab Sharku, and began tilling it.

2-4. Locational Relationships

The geographical location of Damascus in relation to other Middle Eastern cities historically documents its importance. Caravan routes converged on Damascus from the south (Jordan and Saudi Arabia), from the north (Turkey), and from the west (Lebanon), southwest (Palestine and Egypt) and east (Iraq, Iran, India, and China) (see Figure 2-4). Currently, vehicular routes reinforce these ancient routes to maintain and enhance Damascus' importance. The most important roads are the pilgrimage roads for Muslims coming from Iran, Turkey, Lebanon, and northern parts of Syria to Mecca. Also, its central location in the Afro-Eurasian land mass make it part of a system of places connecting regions to the north and south, and east and west. Continental flights now make it a regular stop to link Syria with all other major cities in the world.

2-5. Historical Background

Buildings and urban elements from ancient nations mark Damascus's ongoing vitality and progressive development. The idiosyncrasies of different styles of design and spatial organization can be historically divided into two periods: 1) pre-Islamic (3000 B.C. - 661 A.D.) and 2) Islamic (661 - 1990 A.D.). The pre-Islamic eras marked a locational shift in the city and established its basic physical layout. Characteristics from this period include: walls built around the city (first inner wall around 3000 B.C.), man-diverted streams of the Barada River, including the Banias (2500 B.C.), Knawat and Tora (750 B.C.) canals for city and irrigation use, and the Temple of Hd'd (3000 B.C.), on whose site the Temple of Jupiter (65 B.C.), St. John's Church (529 A.C.) and, later, the Umaiyad Mosque (670 A.C.) were built. The city's natural resources for

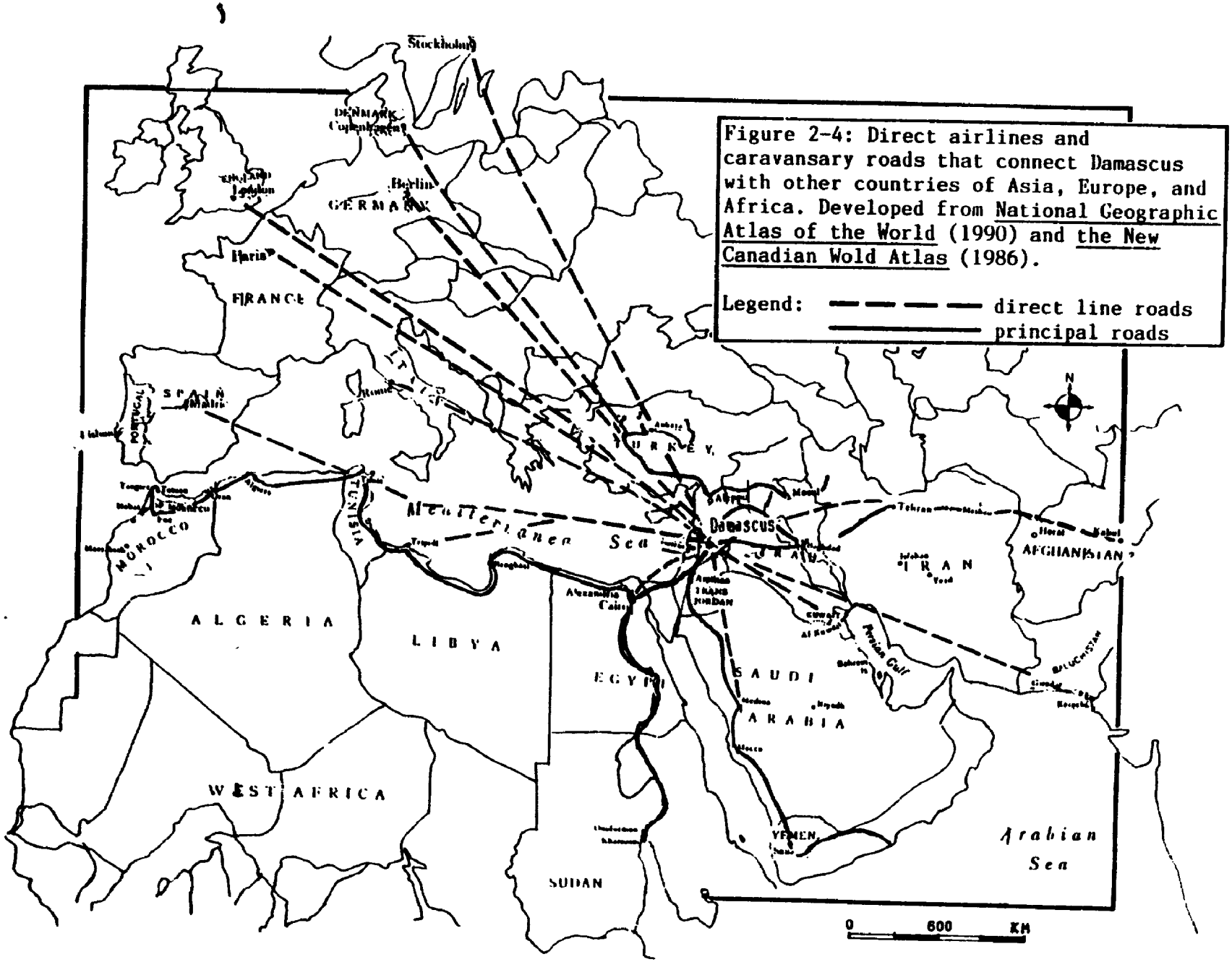


Figure 2-4: Direct airlines and caravansary roads that connect Damascus with other countries of Asia, Europe, and Africa. Developed from National Geographic Atlas of the World (1990) and the New Canadian Wold Atlas (1986).

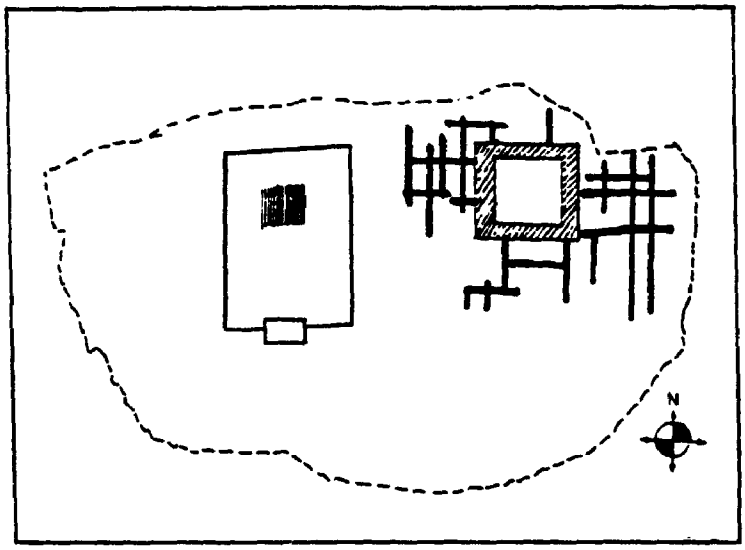
Legend: direct line roads
principal roads

construction were earth and wood. Stones were imported for use in city walls and temples, the king's palace, and house foundations.

Figures 2-5,6 show development of Damascus during the Arameen Kingdom, Greek Empire, Roman Empire, and Byzantine Empire. During each of these empires different beliefs and ideologies were reflected in architecture, street systems, and spatial organization of activities. The Arameen Kingdom and the Roman Empire expressed their domination and power by building city walls, a main temple, and the king's or governor's house. In contrast, the Greek and Byzant empires concentrated on more humbly built environments, as expressions of social and religious values. Temples/churches and low-rise buildings were hallmarks of these eras (see Table 2-1).

The Islamic period of Damascenes development begins in 661 A.D. Each dynasty during this period contributed significant features. In the Salah al-Din period (1174-1263) the citadel, city walls, and *madaress* (schools) were constructed; the Mamluk period (1263-1516) is noted for mosques and tombs; and the Ottoman period (1516-1916) added commercial areas and mosques. Each period is marked by distinctive public buildings: Salah al-Din used white stone, and Mamluks embellished their buildings with white and light brown stripes in horizontal rows of stones. Ottomans decorated their buildings using white and black bands of horizontal rows of stones. The Fatimiad period is marked by use of doors for each *Zwkak* (a dead-end street or alley) to ensure secure neighbourhoods. Over the several historical periods building height, layout, and materials used were similar. Table 2-1 summarizes each era.

Figures 2-7 to 2-11 show Damascus' development and extension outwards from the original walled city. During the Salah al-Din period, residential areas were established beyond northern and southern sections of the city wall, and one, the Al-Salihia quarter, on the slope of Kassion



Amaerian Kanaankte Kingdom

The Temple of Hd'd

The city walls

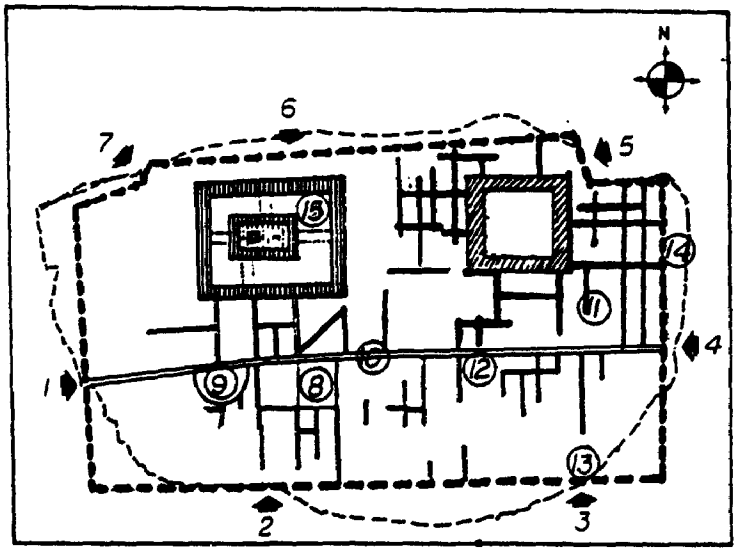
Greek empire

Greek streets

Aqora

0 200 M

Figure 2-5: Damascene early development during Arameen Kingdom (3000-700 B.C.) and Greek Empire (333-64 B.C.) (Ferwati, 1988).



Roman empire

City's walls

The Temple of Jupiter

some Roman streets

1- Bab Djebie
2- Bab Zakear
3- Bab Tissan
4- Bab Sharki
5- Bab Toma
6- Bab Djunk
7- Bab Faradis
8- Amphitheater
9- Government's house
10- Straight street

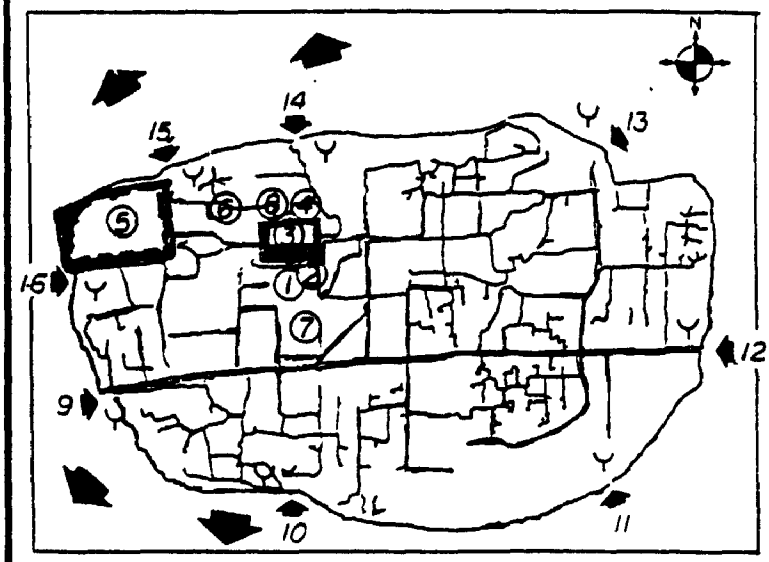
Byzantine empire

Aswak

church of St. John

11- Mosselba church
12- Mokasslat church
13- Elia' church
14- Hanania church
15- Administration Bldg.

Figure 2-6: Damascene development during Roman (64 B.C. - 400 A.D.) and Byzantine (400-66 A.D.) Empires (Ferwati, 1988).



Legend:

Islamic walls

Extension outwards of the city walls

Umaiyad period

1- Administrative buildings
2- The green dome's Palace
3- Abdullaziz's house
4- The Umaiyad Mosque

Nur al-Din and Salah al-Din periods

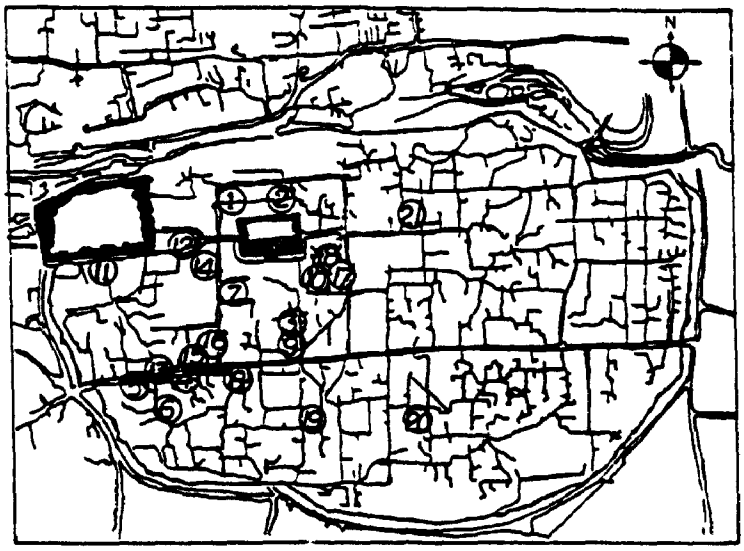
Minaret on each gate

5- Citadel
6- al-Hadilia school
7- al-KalDjia school
8- Salah al-Din Dome
9- Bab Djabia
10- Bab al-Zakear
11- Bab Tissan
12- Bab Sharki
13- Bab Toma
14- Bab al-Salam
15- Bab al-Faradis
16- Bab al-Nasser

0 200 M

Figure 2-7: Damascene development during Umaiyad (661-750 A.D.) and Nur al-Din/ Salah al-Din (1075-1263 A.D.) periods (Ferwati, 1988).

Figure 2-8: Damascene morphology during the Salah al-Din period (1174-1263 A.D.). Notice the extension outwards from the city walls, (Zouhdi, 1982).



Legend:

Mamaluk Period

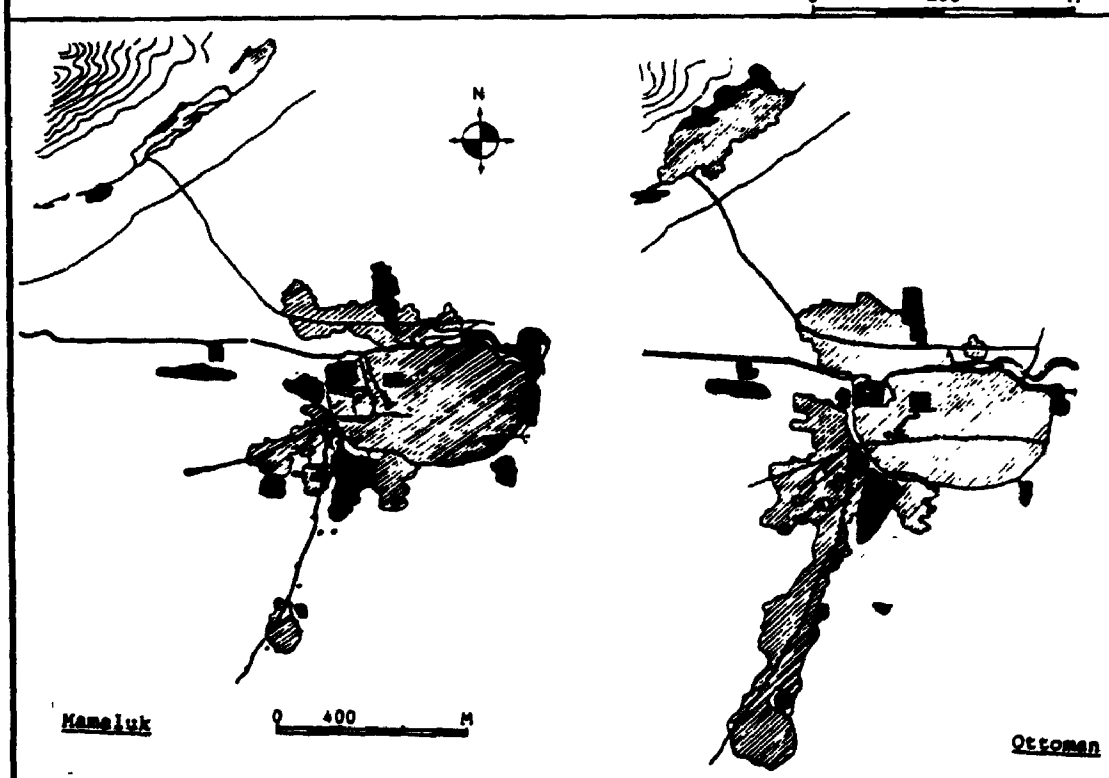
1- al-Madrasa al-Zahirea
2- al-Madrasa al-Diakmak
3- Dar- al Hadith
4- Hisham Mosque
5- Kal'i Mosque
6- al-Madrasa al-Diafrieo

Ottoman Period

7- Kan al-Harer
8- Kan Seliman Basha
9- Kan As'ad Bash
10- Kasser al-Azem
11- West part of Hamidiea
12- East part of Hamidiea
13- Suk Madant Basha
14- Kan al-Jamroke
15- Kan al-Zeit
16- Kan al-Amod
17- Djabry's house
18- Kawatly's house
19- Suba'ea's house
20- Najea's house
21- Sawaf's house

0 200 M

Figure 2-9: Damascene development during Mamaluk (1265-1516 A.D.) and Ottoman (15-16-1916 A.D.) periods (Ferwati, 1988).



دمشق في بداية القرن السادس عشر (سوفاجيه)

دمشق في بداية القرن التاسع عشر (سوفاجيه)

Figure 2-10,11: Damascene morphology during the Mamaluk (1263-1516 A.D.) and Ottoman periods (1516-1916 A.D.). Notice the extension outwards from the city walls (Zouhdi, 1982).

Mountain. During the Mamluk period, outer residential areas were expanded. Additionally, on the route to Mecca, the al-Midan, a separate residential area, developed about one kilometre from the city wall. During the Ottoman period, al-Midan quarter was linked with the cld city. Al-Salihia grew, but was maintained as an independent community. At the end of the Ottoman period, al-Salihia was linked to the walled city (see Figure 2-12). Today Damascus has tripled in size (18,000 Hectares), and new areas have developed, such as Al-Mazza, Yarmouk, Tabalh, al-Hajjar al-Asoud, and al-Addawi (see Figure 2-13).

Table 2-1: Empires and dynasties governing Damascus from 3000 B.C. to today, their built environments, characteristics, and symbols.

ERA	LAYOUT	BUILDINGS	SYMBOLIC AND SIGNITIVE
PRE ISLAMIC PERIOD:			
Kanaankte & Arameen Kingdom (3000-700 B.C.)	Grid	Rectangle Wall Banias, Kanawat & Tora Canals Temple of Hd'd	Protection Prosperity Sacredness
Greek Empire (333-64 B.C.)	Grid	Agora in centre of a residential area	Greek city model
Roman Empire (64 B.C.-400 A.D.)	Grid	Rectangle Wall with seven gates Forum, Amphitheatre Temple of Jupiter Governor Palace Huge scale structure	Protection, & power Prosperity Sacredness Authority Domination, Roman city model
Byzantine Empire (400-661)	Grid	Churches Cover commercial areas Human scale structure two stories height	Christianity Humility
ISLAMIC PERIOD:			
Umaiyad period (661-750)	Grid Organic	Umaiyad Great Mosque Palaces of Individual Governor Decoration Yazid Canal	Domination of Islam Authority Prosperity Relaxation
Abbasid period (750-968)	Organic	Moved capital city to Baghdad	Neglect of the city
Fatimiad (968-1075)	Organic	Doors of alleys	Lack of security and defense

ERA	LAYOUT	BUILDINGS	SYMBOLIC AND SIGNITIVE
Saljuk, Nur alDin (1075-1174)	Organic	Minaret on City Gates Hospital, schools, & public baths Tombs Gates (Alsaker, Alferag) West wall (aljabia)	Islamizing the city Prosperity Memorials Power, Defense War with crusaders
Salah al Din (1174-1263)	Organic	Schools, Hospitals Up-down lined dome White stone	Victory against crusaders Education Prosperity
Mamluks (1263-1516)	Organic	Decorated minaret Mosques, Tombs White & brown bands of stones	Prosperity Islam Memorials Mamluks
Ottomans (1516-1916)	Organic	Pencil shape minaret Heavily domed mosque White & black bands of stones Big house Covered commercial streets, and caravanseries	Islam Ottoman Prosperity Commercial activities
Modern Syria[6] (1916-today)	Grid	Concrete, Apartment buildings Elevator Cars, large streets Parks	International urban & house design Rapid development Neglect of endogenous design features.

2-6. Basic Islamic Middle Eastern Built Environment and Cultural Features

During the three thousand years of experience, a set of built environmental features have been established in the urbanscape. Understanding Islam is vital to appreciate the social spatial transformation from pre-Islamic to Islamic significance. The traditional built environment in Islamic Middle Eastern cities reflects socio-religious principles that form the bases of Islamic ideology. According to contemporary Islamic beliefs and practices, these are:

1) orchestration of life around five-times daily prayer (morning, noon, afternoon, sunset, and evening times) to be performed preferably in

[6] Section 2-7 of this chapter elaborates on exogenous modern design features and urban forms.

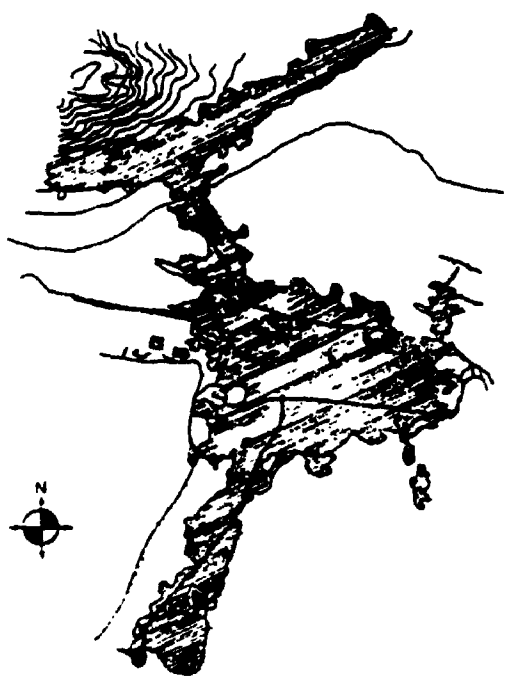


Figure 2-12: Damascene morphology in the early 19th century (Zouhdi, 1982).

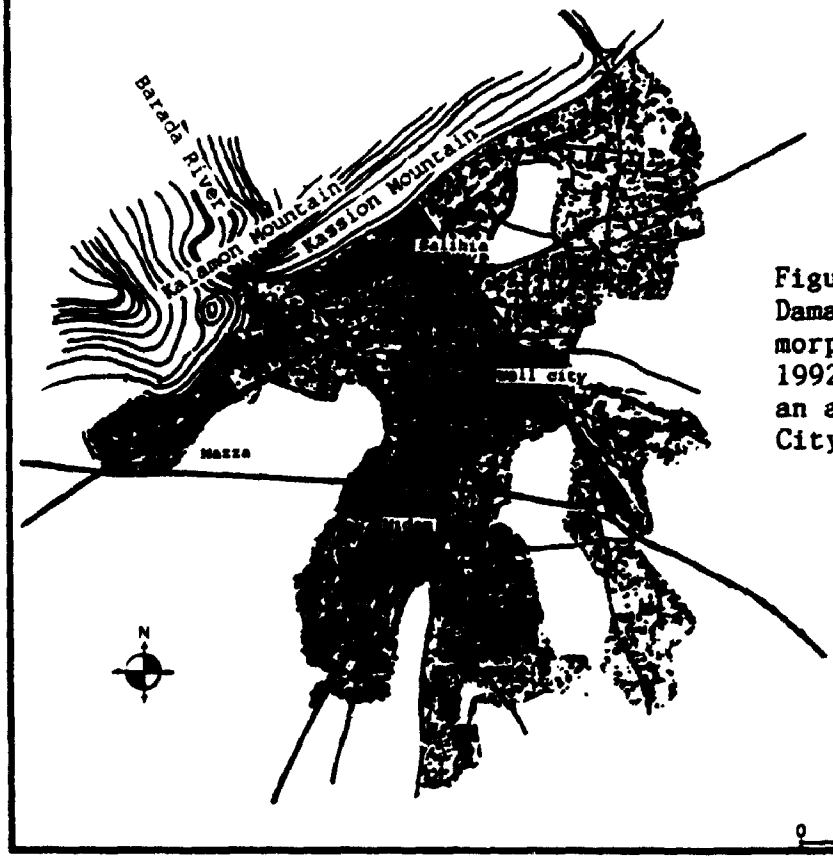


Figure 2-13: Damascene morphology tody, 1992. Developed from an air photo, City Hall, 1988.

a mosque. These religious activities mandate the location of mosques close to residential and commercial areas.

2) limited public interaction between men and women to promote privacy and segregation. A clear segregation of houses from street life, defined by house introversion by centralization around an inner courtyard.

3) pursuit of the "image of Eden" by inclusion of air, light, water, and plants in the design and decorative elements of buildings. The inner courtyard represents this image, whether it is found in public or private buildings.

4) prohibition of human images in pictorial or sculptural forms. As a result, two patterns, calligraphic and arabesque, prevail signifying Islamic art. Both, whether consisting of geometrical, foliation, or organic patterns, are used to provide a spiritual effect and make the space function more pleasantly.

These principles are Islamic demonstrations of human spatial tendencies for connectedness, separateness and nearness (Bjorklund and Philbrick, 1975). They visually express Islamic ideological relations about what is believed to be necessary links between heaven and earth, what should be separate and what should be near. Islamic culture embeds these spatial tendencies in the design of physical structures. Examples of such links between ideology and physical structures are:

a. Mosque(s): Mosques serve as centres of residential and social activities. The mosque is a place for socio-religious gatherings for such purposes as prayer, study, and meeting with others. As a result, two types of mosques developed: 1) *al-Masjed al-Jamha*, where five daily prayers are performed, including Friday prayer, and 2) *al-Masjed*, where less than five daily prayers are performed, excluding Friday prayer.

Mosques of these two types become the principal focal units of neighbourhoods in Islamic cities. Every traditional city has in its centre a Great Mosque, as in Damascus. The prominence of mosques as nodes and as landmarks/ ear marks[7] gave early Islamic cities their spiritual significance.

It is notable that palaces of different dynasties are not as legible as mosques. They lack vertical features and distinctive exterior characteristics (e.g. Alazzm Palace) making them less conspicuous. Generally speaking, less significance is attached to these structures because they represent only individual leaders whose palaces are expected not to contradict with the principle of equality among Muslims. For example, all Mamluk leaders did not have palaces built in their honour though many mosques were left carrying their names, such as Tinkas Mosque (1296 A.D.), Arqon Shah or Sanjaqdar Mosque (1329 A.D.), and Manjak Mosque (1355 A.D.).

b. Organic structure: The traditional built settlement consists of two-story low attached residences with main window openings onto inner courtyards. The traditional built form has an organic shape that can be explained according to the Islamic principle "neither *darar* nor *dirar*" (neither harming or acting to harm others). According to Akbar (1988), this principle defines the freedom and control over altering the built environment.

> "...neither *darar* nor *dirar*" refers to a tradition of the Prophet that translates as: "(T)here should be neither harming nor reciprocating harm"; or "(T)here is no injury nor return of injury". This saying was interpreted to mean that one may alter the built environment so long as the alterations cause no harm to others, and was used constantly by Muslim authorities to evaluate the legality of individual actions in the physical environment."
>
> (Akbar, 1988, p. 93)

---

[7] Ear mark is the distance the call for prayer can be heard. It determinants how far is one's place from the mosque in respect to the strength of the Azzan, a call for prayer by the muezzin from the minaret.

This principle affects decisions of locating a house and of selecting the orientation of the house with respect to windows and door entrances. No one is allowed to locate a door where the eye can penetrate the privacy of other neighbours (see Figure 2-14). The same principle explains the location and structure of windows, the height and exterior colour of buildings, and the activity functions of properties. Overall, the main concern in the traditional environment is the assurance of a high degree of privacy in the family's personal domain.

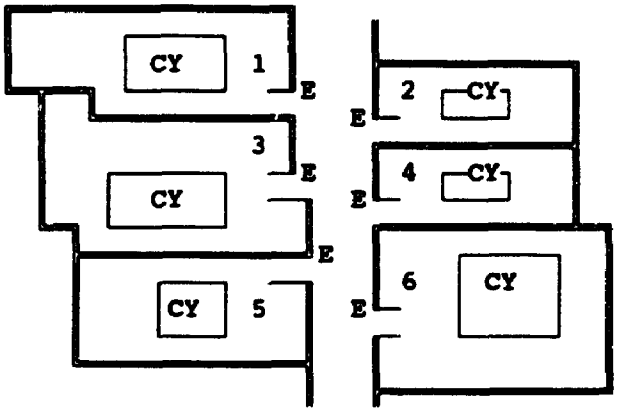
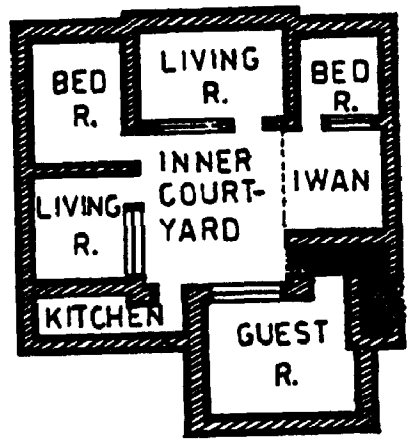


Figure 2-14:
Location of six Traditional houses illustrate:

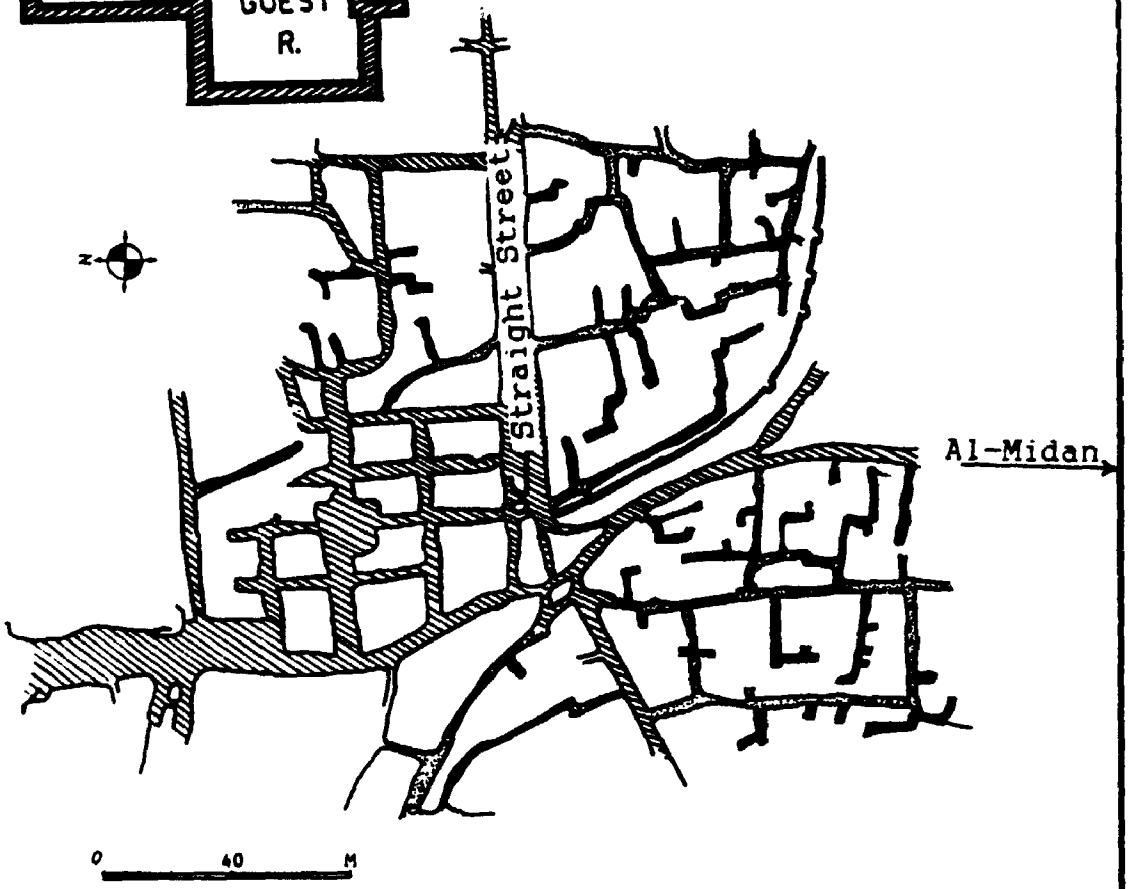
A. Off-set main entrance doors (E) locating on street.
B. Inner courtyard (CY) for interior focusing households.
C. Variable width of street.
D. Few windows on street, lattice work windows for protection. (no scale)

Four-main examples are presented in the Islamic built environment: off set front entrances, variable width, few windows facing street protected by lattice-work covering, and open-to-the-sky inner courtyards giving a sense of space.

c. Street Network: There are four grades of arteries differentiated by width, height, and overhead cover to mark gradation from the most private to the most public zones. These are as follows (see Figure 2-15): (a) the house entrances (*medkal*) as the most private; (b) the dead-end street and alley (*zwkak*), 1-4 metres wide, used by only people who live along the same street, thus considered as a "semi-private zone"; (c) the secondary artery (*hara, or semi-public zone*), 5-9 metres wide, as the link between *zwkak* and the main street. It may be used as a short-cut by the people who belong to the same quarter and are familiar with the locality;



A sample of Damascene traditional houses. Notice the shape of the entrance that forms the Medkal, or private zone.



Medkal, or private zone

Zwkak, or semi-private zone

Hara, or semi-public zone

Sharrh, or public zone

Figure 2-15: Transition movements from public zone to private zone, the old city of Damascus, (Ferwati, 1988).

and (d) the main artery street (*sharrh* or *suk*, or public zone), 10-15 metres wide. It is notable that the height of buildings does not signify differences in street artery types. Whether in semi-private, semi-public, or public streets, the height of buildings is generally two stories. However, heights of overhead covers of streets differ from commercial and residential areas. In the commercial areas, the overhead covers of streets typically are two stories; while in residential areas, zones of semi-public and semi-private streets, they are one story high. The height is determined by the vertical distance required for a horse-mounted-rider to pass (see section 2-7 for more details).

d. Lattice Window (*Mashrabia*): This is a wooden structure fitted over windows through which occupants can view outside their private place and communicate with visitors and solicitors, or observe the streets, without the visual interference of pedestrians. *Mashrabia* are used, also, to create a romantic atmosphere, and to filter light.

e. Inner Courtyard (*Ard-Diar*): It is found in private and public traditional buildings. The components of the inner courtyard (fountain, trees, plants, sky, and *Iwan* [an open room to the north]) symbolically represents the Garden of Eden described in the *Quran* (the Muslim scripture book). In essence, the central open area of the house contains all the elements associated with heaven.

> "For them [the good] the gardens of Eden, under whose shade shall rivers flow" (*Quran*).

f. Decoration: Artistic works focus on calligraphy and arabesque art (Fat'hi, 1982). Through these styles Muslim artists express a sense of unity whereby art becomes part of Muslim identity. Wall decorations include two dimensional patterns of geometrical shapes or lettering from the *Quran*, interlaced with plants, and intricate stalactite forms of highly coloured wood or ceramics. The absence of representative pictures

and sculptures is due to strict religious prohibition. Art depicting people is strongly discouraged to avoid a loss of equality of persons within the community and to prevent individual deification or domination.

2-7. Traditional Built Environment

The previous two sections identified the basic locational effects and design features drawn from several historical periods and socio-religious beliefs to make the distinctive built environment of Damascus. This section describes the traditional built environment regardless of the factors underpinning such developments. The traditional domestic built environment consists of organically connected buildings, shared walls, or contiguous independent walls bound together by a system of private and public routes, that limits interference with household privacy or maximizes social interaction.

To focus on the house itself, there are three distinct zones. One is the *Barani* (guest section), which follows directly from the main entrance. Another section is the *Haramlic* (family section). It is completely limited to the private use of family members. This zone has two areas: the living area (on the first floor) and the sleeping area (usually on the second floor). In the living area, the main room (*Ka'a*) is used as a guest room, for big family gatherings, and for entertaining close friends. It is close to the kitchen with an entrance from the inner courtyard. The third zone is the service area. It includes kitchen, storage area, and a small room for preparing food with two entrances, one to the inside the kitchen and the other to the inner courtyard. This zone is also adjacent to the *Barani* zone.

The height of buildings (houses and other structures) is normally two stories without balconies; the exception occurs in the northeastern part of the old city, where balconies fronting onto the street may be

present. Building materials for houses generally are stone for the first floor, and mud-brick and wood for the second floor. The whole exterior is plastered with a white mixture of calcium hydroxide and straw.

The material used for public buildings is stone. The permanent features of these buildings are the *moqarnas* (Alveolus, or honeycomb) (see Figure 2-16) and arches. The *moqarnas* and arch are structures used to distribute the weight of upper floors and to provide openings in walls. *Moqarnas* are used in the upper corners of rooms, entrances, and domes. Arches form the centre of large rooms, such as the *Ka'a*, on the open side of *Iwan*, and on the first floor, framing big doors and windows.

Street Pattern: The street patterns of the pre-Islamic and early Islamic era in the Middle Eastern cities are quite similar. However, in the Middle East, the street pattern has at least three functional purposes (besides the principle of privacy) that developed through time.

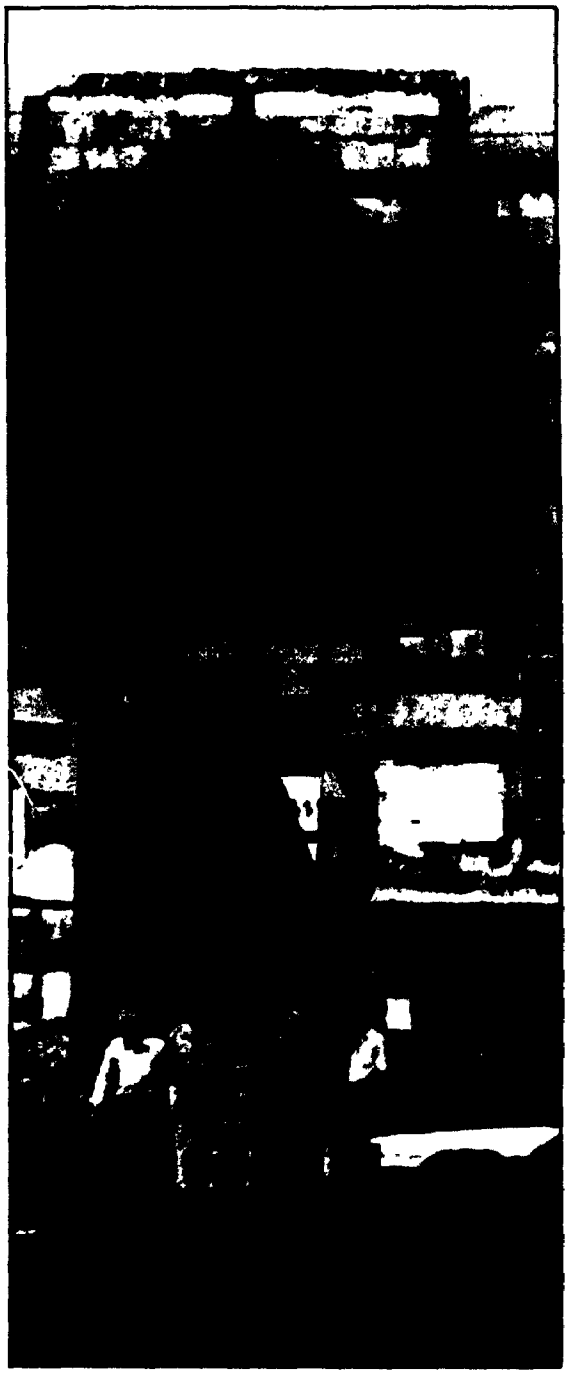


Figure 2-16:

A *mogarnas* (honeycomb) of al-As'bahia Mosque. Bab al-Jabia, Damascus. Photo by the author, 1988.

First, as open space, the street network is a narrow, curved-shape formed by angular building edges. Thus, the street network provides shade to pedestrians (except at mid-day), limits light, and reduces wind. Second, the street (especially, semi-private and semi-public) is a play space for children and an encounter space for adult persons (male and female) in the course of ordinary daily events. Third, streets form part of the defence system by limiting visibility and not revealing the destination of roads.

Squares and Nodes: In traditional Damascus, as well as in other traditional Islamic cities, there is no main square, as is common in many other traditional cities of the world. Inner courtyard of mosques serve as public arenas for many social activities. Nodes at the intersections of streets or a widening of a street may also serve as meeting places for people, although these accommodate smaller numbers with less regularity than mosques.

Socially, there are three main physical features of the built environment that encourage interaction among people. First, the narrow streets facilitate eye contact of passers-by. People greet each other and talk (Gehl 1987), resulting in high levels of social interaction between inhabitants. Second, people meet in the mosque daily to conduct prayers, also providing opportunity for people to interact. Every neighbourhood (*hara*) has its own mosque for religious and congregational purpose. In addition, commercial places, such as corner food stores and butcher shops, also provide opportunity for neighbours to meet. Finally, there are coffee houses, where men come to pass time and meet friends. The compactness of the traditional city with complex interactive features support regular and intense interactive possibilities. Generally speaking, the set of forms experiencing the built environment provides a continuous set of surfaces, merging in intimacy of use, ranging from public to private, gender-restricted to gender-free.

The defence system embodied by the traditional built environment has four levels: the city wall forms the first defence level; the doors on semi-public alleys form the second defence level; the doors on semi-private cul-de-sacs form the third; and the houses themselves form the fourth defence level. Outsiders entering any locality cannot be certain of an outlet or of being able to avoid trespassing.

2-8. Modern Built Environments

The modern sections of Damascus are widely referred to as "Western" or "foreign". They are differently constructed, forming contrasting additions to the city's older identity. The word "modern" has two meanings, "characteristics of the recent times or of the present;" and "characteristics that relate to the advanced style, technique, or technology" (The American Heritage Dictionary). Applied to the built environment, the first meaning might imply negative or positive effects on the users' convenience, while the other is imagined by Damascenes as something of great value or prestige. The negative interpretation of this term results from mixture of the concepts of contemporary and advanced. For example, it has been used to obscure problems emerging from new exogenous designs, such as direct openings of buildings to the outside, causing intrusion into peoples' privacy and creating new types of inside-outside space arrangement regardless of the users' view.

The modern built environment of "new" Damascus is characterized by at least three types of exogenous building design and arrangement: 1) attached walk-up apartment buildings (from 2 to 4 stories high); 2) detached walk-up apartment buildings (from 3 to 4 stories high), and 3) elevator apartment buildings (from 5 to 11 stories high). Each of these three residential styles and layouts provides a distinctly different built environment for people. Just how do these different environments affect people's spatial behaviour? Distinctive features of each type are

presented, then the interior layouts of these house types are compared with their counterpart of the traditional type.

The inner design for all three modern types follows the same pattern (see Figures 2-17). In contrast with traditionally built environments, the basic distinction lies between front and back, with little or no emphasis given to inside and outside private spaces. In comparison to the traditional house, the inner courtyard becomes a hall or inner-room to which the remaining rooms have private doors. Windows have to be opened to the outside. The use of the lattice window (*mashrabia*) is replaced by window blinds, and the position of the guest room in the traditional house is also found in all types of modern apartments with its special entrance.

As Figure 2-18 shows, in modern houses each floor has more than one apartment. This means some apartments have windows facing only one or two directions. In other words, some inhabitants have a pair of directional exposures (southern and eastern sun exposure) and some have only a single exposure. In contrast, in the traditional house, the inner courtyard makes four directional openings possible. Through the inner courtyard the house has all kinds of seasonal sun, as well as morning, noon, or afternoon sun and/or shelter. However, there is considerable variability of exposure from large windows, depending on its courtyard orientation. The walls of the inner courtyard are reflectors of strong indirect sunlight into rooms that have directional disadvantage. Observations of the social and physical characteristics of each modern type will follow in more detail.

A. The first case, attached apartment buildings, are constructed from reinforced concrete (since the 1930s) as a substitute for traditional materials. Some traditional design aspects have been incorporated in various ways in this pattern. The attachment of household units results in an arrangement similar to those of a semi-public street, *Hara*, where

Figures 2-17:

(a) A plan of attached residential units in Alshwika quarter, built in 1962.

(b) A plan of detached residential units in Alkassah quarter, built in 1970.

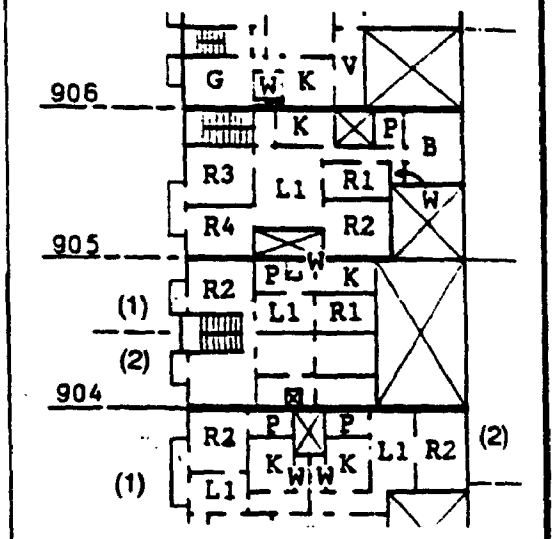
(c) A plan of Elevator residential units in Aladawi quarter, built in 1975.

Notice the similarity in all plans, especially the function of the halls; also the poor direction (having only N., E., or W. windows) of some houses. Solid thick lines differentiate residential units.

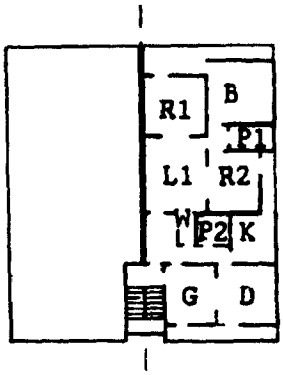
Legend:

D = Dining room, G = Guest room,
W = Washroom, S = Corridor/Hall,
L = Living room, B = Bedroom,
P = Bathroom, R = Room,
K = Kitchen

0 2 4 6 8M

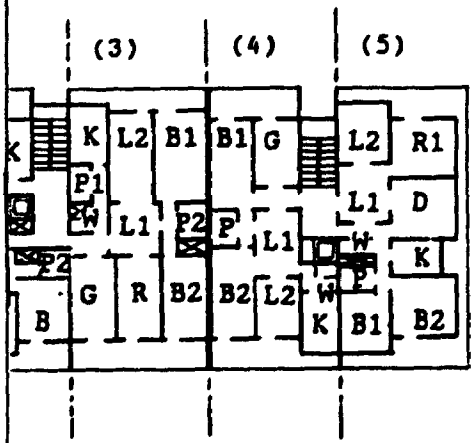


(a)



3332

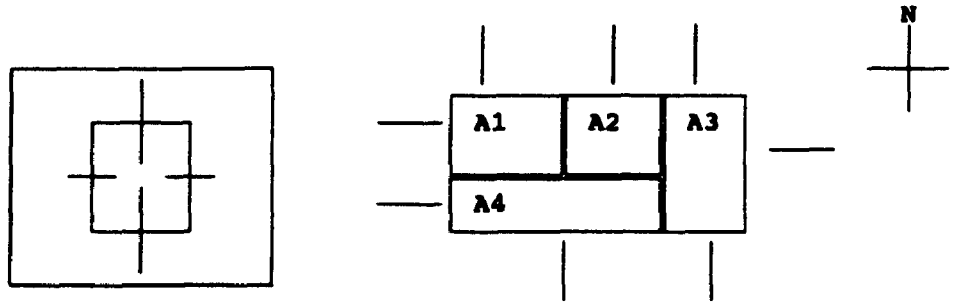
(b)



18

(c)

Figure 2-18: Directional (N,E,S,W) overtakes of a traditional house and four apartment units (A1,2,3,4).



residents share the same access to their units even though they do not live in the same buildings. The closeness of buildings makes people aware of their neighbours who share the same street with them. Also, closeness of buildings and their three-story height adds an extra floor over traditional houses. Whereas the inner courtyard of the traditional house makes it possible for inward openings, the light hole, found sometimes between attached apartment buildings, makes it possible for some units to have windows for back rooms. These three aspects of attached apartment buildings (attachment, height, and light hole) represent a transition from traditional to modern designs and layouts (see Figure 2-19).

To break the width of the *Hara*, trees (average height of 6 metres) are planted, to provide a pleasant view and protection, for pedestrians and cars parked on both sides of the *Hara*, from summer sun. Trees reduce sun exposure of hard surfaces and diffuse heat radiation and brightness that bother pedestrians.

Socially, in the *Hara*, young people gather to talk or play games, such as the popular game of soccer. Moreover, the barber shop and the butcher shop, located within or close to each quarter, are also places where people shop, meet, and spread local news.

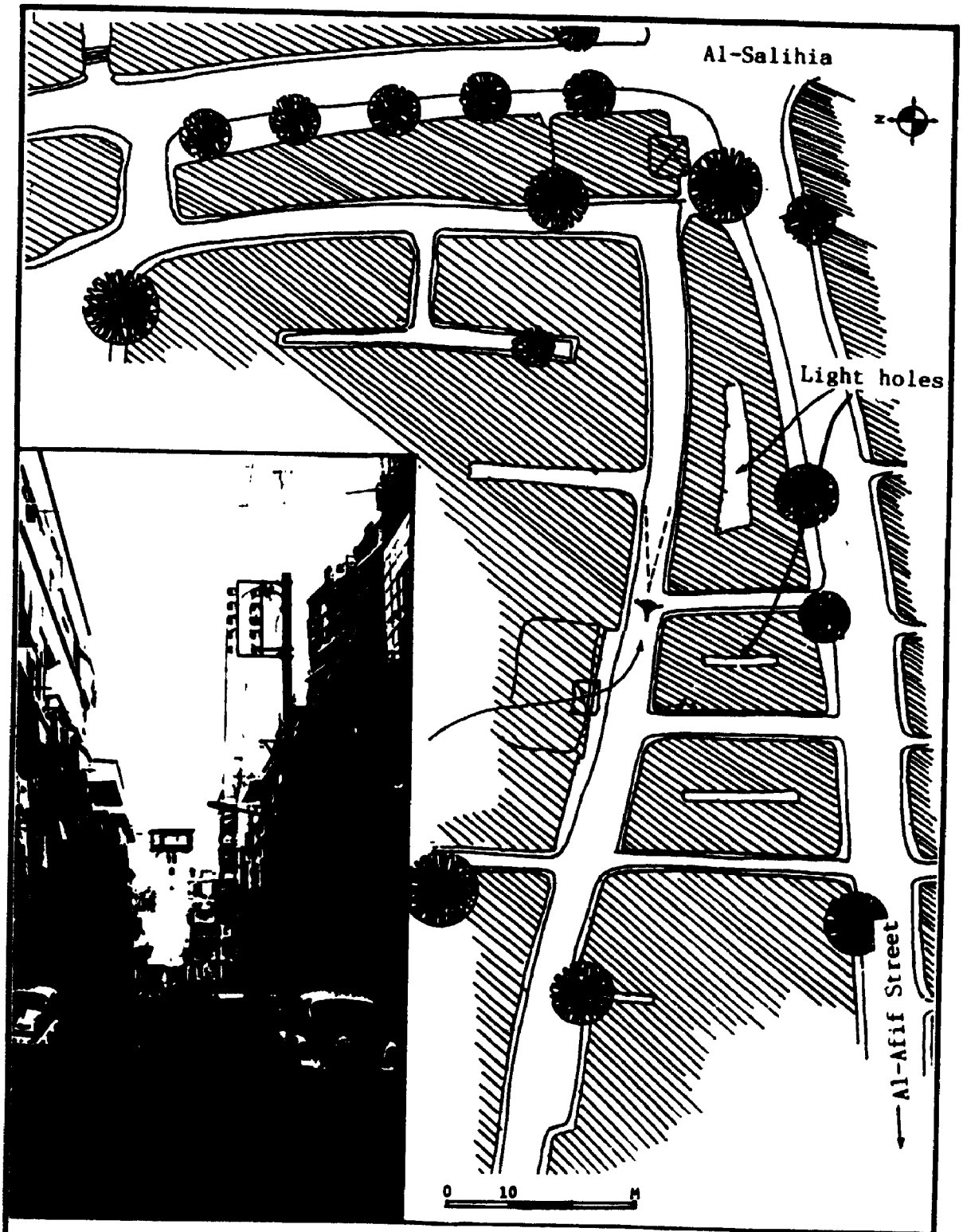


Figure 2-19: The idea of Hara is transferred to modern Attached neighbourhood by joined buildings, use of streets as squares, compactness of neighbouring buildings, construction of minarets on streets, and shady pedestrian areas. Al-Salihia quarter, (Ferwati, 1988).

B. The second case, the Detached walk-up apartment building, is a relatively new style in the city introduced around the 1960s. Each building stands by itself, but there is a concrete wall that surrounds all buildings in the same block. Street characteristics and social interaction are similar to the previous type with one exception. The street network has a clear grid-like pattern. Both Attached and Detached neighbourhoods lack semi-private dead-end streets, and have very few exclusively pedestrian routes. This means that vehicles are constantly present. Thus, people must compete with machines for use of space. This urban pattern raises an important question: how does this pattern socially affect the inhabitants? Pedestrian interaction is weakened in street-focusing designs because of the location of shops along traffic streets and busy intersections with traffic hazards, adding extra burdens upon residents whose activities become dominated by the consideration of vehicles.

C. The third case, elevator (or high-rise) apartment buildings, the newest style in Damascus, are added to the urbanscape around the 1970s. It is a partial application of Le-Corbusier's utopian idea of the future city with extended open space at ground level. This design is dependent on elevator access, escalating land cost, and increased demands for housing. In this style, each building stands by itself, surrounded by parking lots and open space. Commonly, main thoroughfares form the edges of building blocks. High volume vehicular traffic frame the neighbourhood unit. In the elevator apartment zone, inner streets separate pedestrians from automobiles through intensive use of cul-de-sacs and pedestrian paths. The street system in the Elevator neighbourhood is similar to that of Radburn, New Jersey, built in 1928. The construction of Radburn differentiated between pedestrian and automobile spaces in order to cope with problems caused by automobiles (Relph, 1987).

Building facade, placement of doors and windows, building colour, and materials used in Elevator neighbourhoods, are similar to that of Detached neighbourhoods. Socially, stairwells, elevators, and bus stops become occasional meeting places for neighbours. Mosques, also a social place, become less effective in Elevator neighbourhoods than in Traditional neighbourhoods. Sites of mosques are lands designated for public facilities, such as schools, parks, and mosques, within already constructed residential buildings. Their minarets once the primary visual eye-marker on the skyline are now dwarfed by sorrow high-rise structures. Once a strong landmark, the mosque has diminished visual and social impacts, and thereby perhaps even diminished in the consciousness of some residents. This can contribute to obscurity of mosques, whose status is further diminished by its relative location among high-rise buildings.

2-9. Neighbourhood Typology (Study Areas)

Damascus has four distinctive residential types, Traditional, Attached, Detached, and Elevator buildings. The land use map (see Figure 2-20) shows that each residential area occupies a considerable territory. Attached residential areas forms 48 percent of the city's residential areas, mostly located near Traditional areas and in the south. Traditional residential areas, forming 17 percent, are located in the centre, south, and northwest parts of the city. Detached residential areas, forming 20 percent, are mostly found in the north and the west. Elevator areas cover 15 percent of the all residential areas. They are mostly found in the north and west, near Detached residential areas.

The built environments selected for this study form unified sets of neighbourhoods. They have distinct surroundings, ages, styles, layouts of housing, supporting structure, and systems of pedestrian and vehicle network use. To assure representativeness, study areas are selected to fulfil the following criteria:

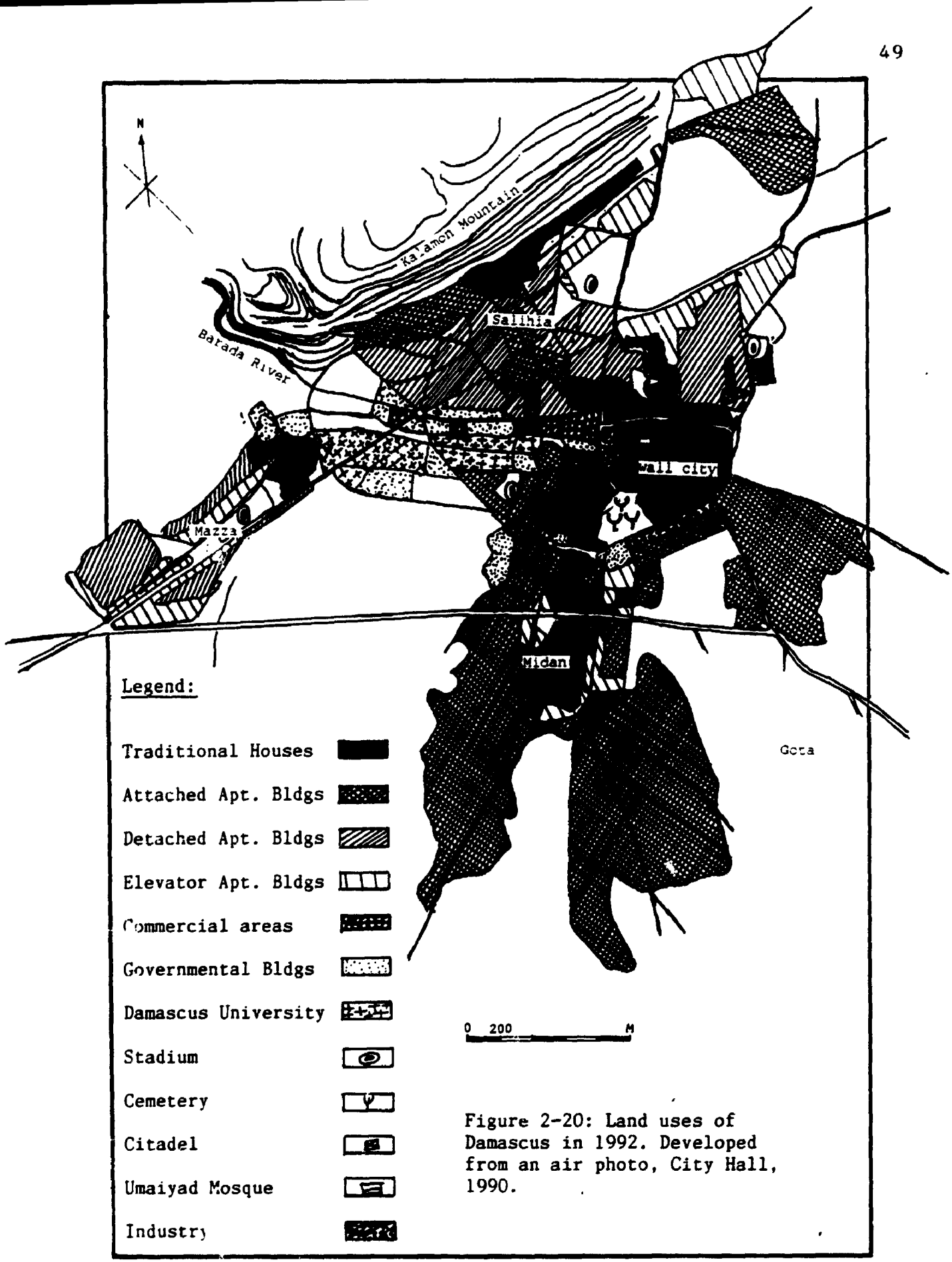


Figure 2-20: Land uses of Damascus in 1992. Developed from an air photo, City Hall, 1990.

A. Each area had to have a mix of public, semi-public, semi-private places, and private spaces.

B. Each area had to be relatively homogeneous in urban form: Traditional houses, Attached apartments, Detached apartments, and Elevator apartments, since the study is concerned with the analysis of different forms of built environments.

C. Each area had to have clear boundaries separating it from neighbouring areas, since the concern is with spatial relationships among open spaces within a residential environment. A boundary could be

a public or a semi-public space used by both cars and pedestrians. The public area may be a plaza, a commercial strip, or a large main street.

D. Each area must contain or be close to a mix of commercial and public uses, and the major use of the units must be residential, since the concern is with built form as a representation of social structure and human interaction. For Traditional and some Modern-residential areas, commercial strips tend to form boundaries of the neighbourhood. For the Modern environment system, especially the Elevator neighbourhood, there are small plazas centred in clusters of residential buildings. Aside from commercial activities, activities may include schools, mosques, churches, coffee houses, and clubs that serve neighbourhood social needs.

E. The neighbourhood-division-map, used by the city planners and by The Study of the Official Plan and the Planning Principles (1970, Arabic

issue, Syria)[8], defines the size of a residential cell as approximately 21 hectares to cover residents, schools, parks, streets, and squares. There are about 12 square metres per person, or around 6000 residents to sustain a cell. Thus, an approximate minimum size of 6.6 hectares is accepted for the neighbourhood threshold. The selected size is large enough to represent a neighbourhood unit, and to allow for comparison among neighbourhoods.

With a large street or a commercial area bounding a neighbourhood unit, occupants will not have problems in defining their neighbourhood. But if a neighbourhood unit is large and not definitely bounded by significant streets, occupants may differ when identifying their neighbourhood because of the "centrality bias". That is, every person tends to regard the location of home as the centre of the neighbourhood, so peripheral places may be excluded from their sense of neighbourhood.

A line is drawn around the neighbourhood units that fulfils all the above conditions (though some occupants may view the boundary of their neighbourhood differently). The selected neighbourhood areas for this research are: (see Figures 2-21T, A, D, E)

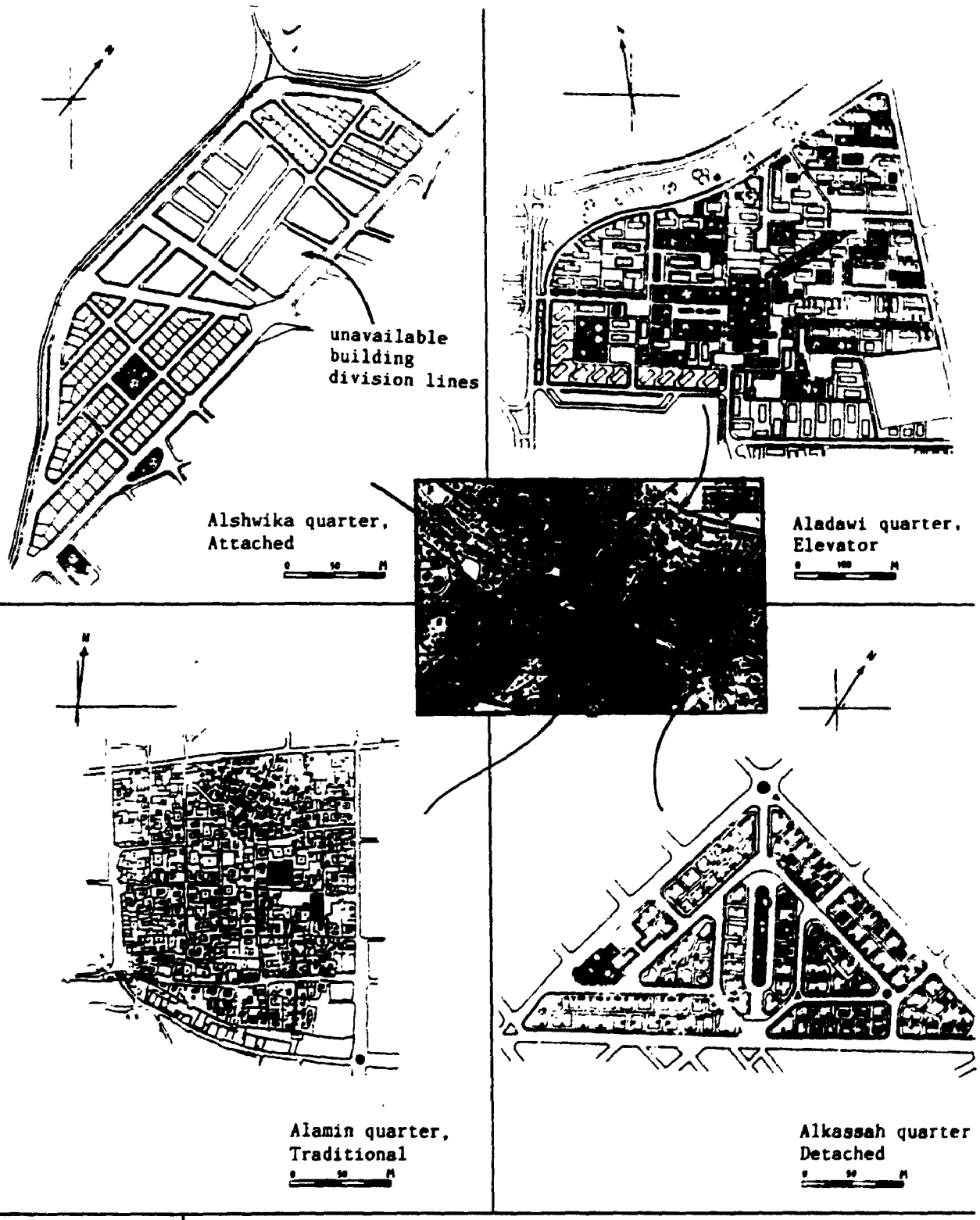
(a). "*Alamin* quarter," for the Traditional neighbourhood (around 500 years old), 6000 residents estimated.

(b). "*Alshwika* quarter," for the Attached walk-up apartment neighbourhood (50 years old), 8000 residents estimated.

---

[8] The Study of Official Plan and the Planning Principles (1970) elaborates on the neighbourhood unit as follows:

Type of use	area in square metres
1. Houses	66,000 - 96,000
2. Schools	
elementary	4,800 - 9,600
secondary and high school	60,300
3. Service area	3,000
4. Parks and squares	6,000
5. Streets and parking (20 % of total area)	35,000
Total	210,000 (21 Hectares)



Figures 2-21: Four types of residential areas

(c). "*Alkassah* quarter," for the Detached walk-up apartment neighbourhood (40 years old), 4000 residents estimated.

(d). "*Aladawi* quarter," for the Elevator apartment neighbourhood (20 years old), 9000 residents estimated.[9]

There are many settlements in the city that fulfil the above criteria. Therefore, the selection of specific areas by the author was arbitrary.

2-10. SUMMARY

Damascus' neighbourhood characteristics are reflections of its environmental setting, long history and culture. Its location on the southeastern side of the Kassion Mountain and Barada River gives Damascus some climatic protection and endurance as an oasis providing continuous desirability since 3500 B.C., when people occupied its land, as an earlier lake receded. The long history of Damascus, evidenced by many empires since 3000 B.C., produced diversity in architecture, street systems (grid, radial, and organic) and (mosque-centred) neighbourhoods. Four residential types are recognized, Traditional, Attached, Detached, and Elevator residential areas. The following chapter introduces semiotics, the basis for analyzing and answering questions regarding the similarities and differences among four neighbourhood types. Semiotics forms the central approach to the study of differences between old and new urban systems in terms of effectiveness and meaning, as stated in the research hypotheses.

---

[9] Note, population estimation were calculated by the author from published density data in The Study of the Official Plan and the Planning Principles, 1970.

CHAPTER 3. GEOGRAPHICAL SEMIOTICS: LANGUAGE OF URBAN ENVIRONMENTS

3-1. Introduction

The concept of "language" applies to more than verbal forms of communication and its customary consideration in linguistics. Its use extends to various modes of communication now being examined in the social sciences (Greimas, 1990). Included in the disciplines of the study of communicative effects are human geography and architecture, particularly problems concerning effectiveness of the urban environments for users. If verbal language is a phonation in which there is an application of the rules and contingent combinations of signs (Barthes, 1964), what is the language of urban forms and urban environments? Is there a language pertaining to urban function? Is there a visible language to communicate people-environment interaction?

This chapter answers these questions by discussing briefly the field of semiotics in Part 3-2 and Part 3-3. Part 3-2 discusses the linguistic origins of semiotics, and the recent application in urban geography and architecture. The urban environment is introduced next as a dynamic semiotic system. Part 3-3 introduces a model of geographical semiotics as a communication process. Four other models are referred to in order to discuss three components of geographical semiotics: 1) the process whereby people nonverbally read information presented in the urban form, 2) the perceptive/cognitive process to obtain information, and 3) the formation of the built environment as a result of understanding the presented message and modifying the environment according to the users' personal and cultural contexts.

3-2. Semiotics and its Geographical Application

Originally semiotics was developed by linguists who examined the relationship between signs, their referents and integration. It referred to the works of the linguists, such as Saussure (1959,1966), Peirce (1955,1964,1960), Morris (1938,1964,1971), and Barthes (1964). Linguists analyze words and language structures and different meanings within a single society, and between different societies. "Semiotics" also deals with signitive systems as these apply to many forms of visual expression such as art, theatre, architecture, etc. Some architects and geographers agree on the existence of peoples' interactions with their environments based on its communicative significance. Among these researchers are Gottdiener (1963), Broadbent (1969, 1973, 1980), Norberg-Schuls (1974, 1984), Eco (1979, 1988), Krampen (1979), Preziosi (1979a,b), Fat'hi (1973, 1982), Hillier and Hanson (1984), and Akbar (1988). Their works have been helpful to identify, measure, analyze and explain semiotic differences/similarities between old and new residential areas in Damascus. Also, the works of these researchers have been helpful in building up an understanding of the urban environment as "text" (Greimas, 1990). That is, urban elements (i.e., bus stops, streets, and residential buildings) of the built environment obtain their meanings from their relative locations to each others. Bus stops have to be located on sidewalks as middle points between bus lanes and buildings; otherwise, they may be construed as garages, umbrellas, or open market areas. Urban settings of sidewalks, bus stops, streets, and buildings present information about ongoing spatial activities of movement and human interaction. Hence, as Krampen states (1979), the built environment is a text and the users are the readers. The three following sections briefly discuss linguistic origins of semiotics, landscape as sign systems, and urban environment as dynamic semiotic systems.

3-2-1. Linguistic Origins

Urban geographical semiotics has its roots in linguistics, starting in the second quarter of the 20th century. Semiology (as interpreted by Saussure, 1966) or semiotics (as interpreted by Peirce, 1955) is derived from a Greek word '*semeion*', meaning signs. Saussure (1959), a pioneer scholar who explored the nature of language as a process of sign attribution, recognized two parts to the signification process: 1) the signifier or meaningful form (i.e., the pattern or form of signs written on the paper or spoken) and 2) the signified or concept which the word evokes. The characters and form (signifier) of letters, words, phrases, and sentences, as well as the symbolic meanings (signified) attached to them are not invariable, because meanings may change in different contexts and through time.

Saussure claimed that the study of sign was not limited to the linguistic realm. Signs can be derived from detection of sensory evidence. So, signs can be presented in substance, motion, phonation, or behaviour. But Saussure did not see these sign systems necessarily as languages, but systems of significations (Barthes, 1964). Barthes, agreed with Saussure's statement, but he denied the existence of such sign systems autonomously from linguistic admixture.

> "....and in more general terms, it appears increasingly more difficult to conceive a system of images and objects whose signifier can exist independently of language..."
>
> (Barthes,1964,p.10)

A sign is defined as any thing that signifies something, state of being, or value. When no language is involved, communication is nonverbal (Morris, 1971).

The Saussure's dichotomic concept of sign was developed by Peirce (1958), a pioneer American semiotician. He cast semiotics as a triad consisting of: 1) index, the meaning presented by an object that can be 'read' without any cultural knowledge (e.g., a pointing finger), 2)

symbol, the meaning attached to an object which has to be learned in cultural contexts, and 3) icon, an object that reminds us of another (or an original) object by some complex kinds of resemblance (e.g., crescent shape resemblance of the moon during its first and last quarters, is used as a sign of Muslim faith).

Peirce's triadic components of semiotics emphasized the relationship between meanings (derived from form) and forms that totally or partially resemble their referents (icon), have physical connections (index), or have arbitrary associations (symbol). Meaning or message presented by form, thus, is related to how readily such meaning can be conceived. No emphasis is given to perceivers (or users) of the sign. The case of a pointed finger is an index sign, Peirce presumes that users need not know in advance the meaning of such a sign. However, no matter how simple the sign is, its meaning must be intersubjectively known, otherwise, the interpretation is only idiosyncratic. For Muslims the index finger has another meaning besides pointing to something else. When it is pointed upward, it means "there is no God but Allah".

Morris (1938, 1964, 1971) considered Saussure's and Pierce's division of semiotics, while giving an additional importance to the user-sign relationships. He proposed a tripartition of semiotics into: 1) syntactics (referring to objects), 2) semantics (referring to meanings), and 3) pragmatics (referring to the consideration of the sign by users). Doing so, meaning is changeable from one person to another, from one group to another, from one place to another, and from one time to another. Discussion of these parts are provided along with urban/architectural examples to illustrate their utility in this study.

Syntactics represents the study of relationships among signs to one another regardless of their relations to referents or interpreters. Examples of syntactic forms are language, mathematics, and logic, which

mainly study relations between signs. For example, the sentence: "This is a big wooden house" shows four syntactic signs; one is "big", the second is "wooden", and the other is "house", and the combination of "big wooden house" forms the fourth sign - a composite. The syntactic rules are defined by logic of sign, a syntax that results in a certain urban layout, verbal text, piece of music, picture, etc. These significant products Saussure (1959) termed as "signifier".

Semantics is the study of signs in relation to their associated meanings. Meanings are associated with objects, designata, and then interpreted by the users, as interpretants. Both designata and interpretant form the essence of an object (semantics) derived from sensing such an object, (pragmatics) (Uexkull, 1957). Signs exist, based on communication or habits of behaviour (Morris, 1971, p.37). Semantic study is concerned with the history or reasoning behind denotation of signs to objects. Semantics of objects follow three rules based on semiotic components of Peirce (1958-1960), icon, symbolic, and index, as defined above. They are syntactic and also semantic because they represent certain characteristics of objects and direct the attention to certain meanings.

Pragmatics is the study of the relationship between signs and the interpreters or users. It is concerned with how or under what condition an object is considered as a sign by its users, say a lattice window, a *'mashrabia'*. The symbolic meanings of a sign, therefore, is not a result of an immediate reaction to an object, but rather due to habit, as Peirce claimed (1958-1960).

These three semiotic components are interrelated so that the syntactics of "This is a big wooden house" is also semantical since it serves a specific purpose, to define the house that exists within an urban zoned area. Signs affect the users. Agreement among users about the

meaning of the sign develops its intersubjective or denotative value. For example, for everyone the sign "house" refers to a domestic residence. The signitive effect of house also is a reflection of the user's personal taste, image, and values which give it subjective or connotative significance as well. For example, when one says "that is an ugly house", the word "ugly" is not conventionally used to describe a house because it is a result of emotional or personal experience (Venturi, 1973).

3-2-2. Urbanscapes as Sign Systems

The built environment is a collection of elements interpreted as information marking their presence. This information transforms these elements into meaningful signs. Meanings of signs are called by Uexkull "the essence of the object" that is neither material nor energy (Uexkull, 1957). In order to have the essence/meaning of an object, this object must have a common function. For example, the term "Islamic architecture" is a name of particular design features and their arrangement intended to fit Islamic belief, value, and behaviour patterns. The Islamic built environment gives a general understanding of the users' social and cultural aspects (common function). A close look at the Islamic city reveals even detailed information that distinguishes its form from other non-Islamic cities. In sum, the built environment is a societal product that signifies the occupants. Agreement on that, is a step towards forming a language of the urban environment.

If we take privacy as an example, it is an Islamic social principle, embedded in the traditional Islamic built form. It is used in shaping built forms. Location of windows facing the inner courtyard centre the house inwards. The inner orientation of residences creates a separation from street users and activities. However, inside and outside environments are paradoxically still connected. Separation from the outside is expressed by eliminating the possibility of visual penetration from outside. Absence of windows fronting on the street at eye level and

upper floor lattice windows enable observation of the street from inside. Privacy as a social factor affects the connection between outside and inside spaces.

The built environment is a combination of signs controlled by a set of rules, factors, or principles. The built environment is, therefore, a system of signification, or urban language, though it is not phonation, but visible materials, motions, textures, smells, and people's presence and activities that a human being can sense (visually, auditory, olfactory, kinaesthetic, and tactile). The study of language (as signs and rules), whether in linguistic or geographical realms, is the study of sign systems, semiotics.

Urban (or geographical) semiotics is analogous to linguistic semiotics that can be illustrated in several citations.

A) In literature this analogous reference is made to the potential information that objects and words may convey (Eco 1976, Krampen 1979, Duncan 1976, Foote 1983). This information can be presented by colour code, (such as a traffic light), building materials (such as vehicles and pedestrian surfaces), or design features (such as a fence as a claim of territoriality).

B) Garroni, a professor at the Institute of Philosophy, University of Rome, Italy (1980, p. 385), interestingly argues that architectural components such as the column have different meanings according to context, proportion, dimension, and distribution of its parts. He clarifies his argument with an example:

> "The process which characterized the Italian Renaissance has been formerly considered as the resurrection of a "dead" architectural language, whereas it was really a transformation, deformation, and actualization of classical language in terms of a rodern, differently structured, language".
>
> (1980, Garroni, p. 385)

C) Broadbent (1973) claims that the basic use of architecture is to provide a convenient environment for human activities. Similarly, Scalvini states:

> "So we can consider architecture as a system belonging to the realm of 'semioligie de la signification', whose basic aim is the non-communicative function, but whose instruments can be chosen to communicate specific conceptions of the operations they allow".
> (Scalvini,1974,p.966)

The term instrument here refers to the sign object. Scalvini claims the communicative function of buildings are secondary, missing the fact that it is impossible to interact with the built environment without reading its signs. The communicative function is of primary importance. To understand signs, the observer must be familiar with their intersubjective meanings. Without knowledge of the information presented by architecture, arrangement of objects, nature, and people's behavioural patterns, it is difficult to identify particular types of structures, differentiate between sacred places and profane places, male spaces from female spaces, or gender free spaces, etc. Like the verbal language, the nonverbal language provides a communicative form among people. Effective human action and interaction in space becomes impossible without communication with others and with space. As Gillan put it:

> "The integration of the foundations of being and of the world is tied to the passage of the sign. The space within which it is possible to raise the question of the nature of reality is the space created by the signifying relation to the other in discourse"
> (Gillan,1982,p.41)

Explanations about the nature of being can be illustrated by sign systems that human beings have created. Their sign systems reflect the nature of human reality as it is attached to the world.

The realization of the importance of semiotics in human- environment interactions has been almost entirely restricted to the last two decades. Social scientists, such as environmental psychologist (Sommer (1973, 1972, 1974), Altman, et al (1980)), urban designers and planners (Lynch (1960),

Appleyard (1964), Whyte (1982)), architects (Norberg-Schulz (1974, 1984), Venturi (1973), Alexander, et al (1977)), and anthropologists (Hall (1966)) have contributed to this area of science, even though they may not directly use the term "semiotics". For example, Edward Hall (1966) uses the term "body language" to illustrate nonverbal communication of people in public spaces. With different environmental settings, people define their distance from one another. In a crowded street, strange people move shoulder to shoulder. Where physical settings allow for distance, people tend to preserve the distance appropriate to their relationships with others, whether they are lovers, friends, or strangers. The closer the distance between two people, the more intimate is their relationship.

The division of semiotics by Saussure, Pierce, and Morris introduced in the previous section, are redefined according to Eco (1976) and Broadbent (1974, 1973, 1969) to fit the study of urbanscape language. Saussure's dichotomic concept of sign has broad application to a range of experienced phenomena: visually expressed as art, sculpture, architecture, landscape, urbanscape, streetscape, and residential design. Some define signs as objects or design features of the object (signifier) that have meanings (signified), e.g., a house is signified by its residential use. The signified is the function assigned to the signifier. So, the appropriate term in geographical context for sign is that which Eco (1976) refers to as "sign-function", or the relationships between the signified and signifier.

> "When a code apportions the elements of a conveying system to the elements of a conveyed system, the former becomes the expression [signified] of the latter and the latter becomes the content [signifier] of the former. A sign-function arises when an expression is correlated to content, both the correlated elements being the functive of such a correlation".
>
> (Eco,1976,p.48)

The sign-function is recognized when the object and the expression has mutual correlation. This is important because the object (signifier) may stand without an expression system (signified) (Eco, 1976). The

expression in itself is affected by the personal or cultural unit that defines the function sign. In this view, the environment is a mediator between individuals and society (Moles, 1972). Spaces, objects, or forms are distinctive according to their associated message or functions relative to the users intentions. For example, the expression of coffee house from the owner's point of view is an economic sign; from the users' perspective, it is a place to meet friends; while conservative persons may view it as a place for wasting time. Generally, however, it is intersubjectively understood knowledge that coffee houses are male-rendered public spaces to which men converge to interact. Every time there is a correlation between signifier (coffee house) and signified (economic sign, meeting friend, etc.), there is a sign-function.

Eco's term "sign-function", resembles Barthes' (1964) "function sign". Barthes' definition of sign function reduces the importance of object from an equal relation with its associated meaning to be just a part of the sign system. The meaning of a sign 'A' is determined by a certain context. When used in a specific context, it is necessary to look at the sign as a 'function sign' (Barthes, 1964). Syntactic analysis of urban environments deals with signs as function signs. Each sign has its own function that is understood in relation to other urban elements of the built environment, e.g., bus stop, fence, window, etc.

Sign forms are intentionally designed to convey meanings of the desired functions to be carried out. So, the sign can be defined as the architectural design feature or state of being with associated meaning(s). Besides the triadic division of semiotics of Peirce that is applicable to urban form, Broadbent (1974, pp. 904-908) introduces four types of architectural or urban designs: 1) pragmatic, 2) analogic, 3) canonic, and 4) typologic. He regards his distinctions as more useful than Peirce's when applied to building forms and urban patterns. In fact, Broadbent's

divisions represent another way of classifying the relationship between design (form) and the meaning.

Pragmatic designs are traceable to prehistory, during which the available materials were put together, initially by trial and error, until objects, buildings, and other features achieved actually 'worked' (Broadbent, 1974). All vernacular architecture are pragmatic designs. Traditional houses in Damascus are the outcome of long term testing of materials, their use in construction, and relationship to the needs, interests, and ideology of the users. The term "pragmatics" here differs in definition from Morris', introduced in his tripartition of semiotics. Broadbent uses the term "pragmatic design" to refer to traditional architectures, while Morris uses this term to refer to all signs. Morris looks at the past and presents relationships of signs and their users, while Broadbent refers to the product of such relationship.

Analogue designs refer to borrowing shapes from nature and incorporating such shapes in design elements, such as flowers, shells, or birds. An example would be the Islamic interlaced plant decorations. Analogic designs are "index" signs (used by Peirce), because their reference to a natural element is easily identifiable and so it is a reminder of what it resembles. However, not every index is an analogue design, because index signs contain many signs which signify something other than their reference to natural elements. A pointing finger in a painting is itself an analogue to the human hand, but also an indication of direction.

Canonic designs refer to forms generated by use of two or three dimensional geometry; for example, LeCorbusier's modular dimensional coordination (LeCorbusier, 1980) and prefabricated building systems (Broadbent, 1974). Modern architecture in Damascus are mainly canonic

designs, because their designs commonly follow modular systems of 360 centimetres.

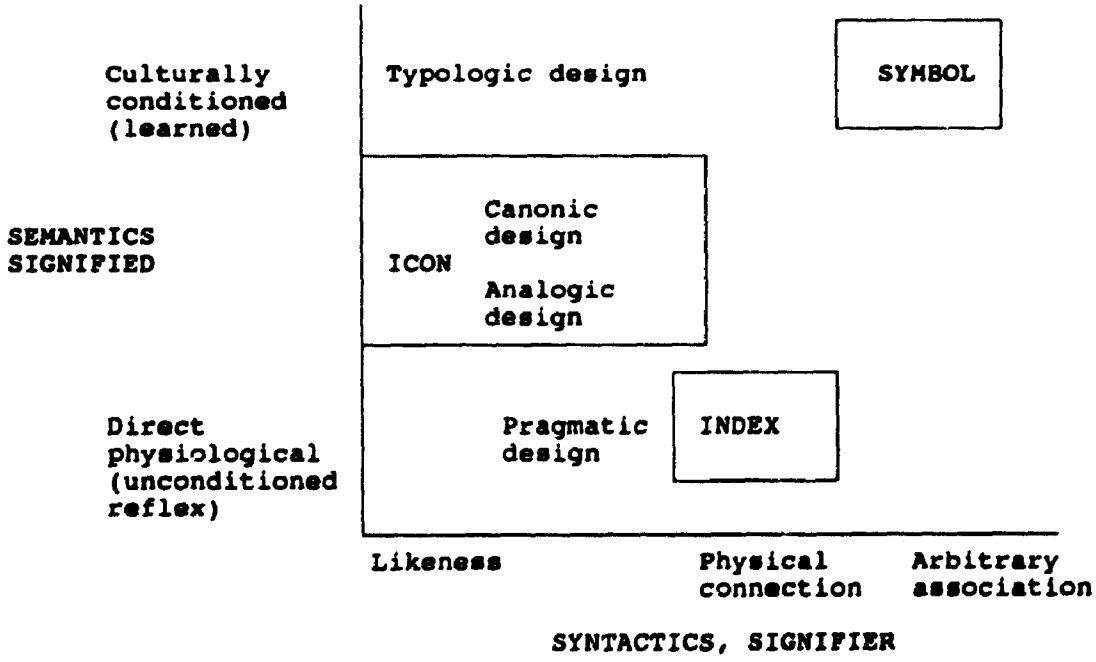
Typologic Designs use a familiar form or a structure in design that invokes a familiar fixed mental image (Broadbent, 1974). Some of the important functions of typologic designs are: (a) to create the image of "scape function" (e.g., a mosque as a place for prayers, education, and congregation), (b) to consider what is valuable even in another culture (such as Islamic decoration and dress in London Islamic centre, England, and (c) to create a fantasy world to mentally transport people (such as the use of arch, dome, and old traditional dresses in AliBaba Restaurant, in Damascus, to fantasize the word presented in the Arabic fiction story, AliBaba and the Fourteen Thieves). Typologic designs transform time, place, and community. For example, the presentation of the Middle Eastern folklore dance, *AlDabka*, in the popular theatre play *AlKorba*, 1980, in Damascus, takes the image to the countryside where tradition was enhanced by clothing and dance of people in the feudal era (i.e., 1930s). The design of a single building in the Midan district in Damascus is typologic. Houses resemble the original houses of the wall city. Each house has a courtyard and fountain, has summer floor and winter floor, and has windows directed mainly to the inner courtyard, and guest rooms located close to the main entrance. Postmodern architecture is also a form of typologic designs since it is crested by the integration of traditional (pragmatic designs) with modern design features (canonic designs or abstract aesthetic forms), such as the construction of the inner courtyard in the new extension of the International Airport of Damascus, in 1981.

Broadbent's semiotic concept (typologic) resembles Pierce's terms (symbol and icon), presented in the previous section. The typologic design reflects elements of the object that it intends to represent, while the term iconic sign can have only some elements of the object it represents. Broadbent's typologic design is also a symbolic design. The

symbolic design here is quite similar to Peirce's concept of symbol. Peirce's symbolic object, though, can take any arbitrary form, so its symbolic meanings have to be learned as a representation of a certain object, idea, and/or people.

Pragmatic, analogic, typologic, and canonic designs are semiotic components. They also are syntactic because they deal with objects and their relation to each other in forming an intended configuration of structure or combination of structures. They are semantic because they stand as function signs, representing reasoning of their form, as time is an important factor to reach a traditional design (pragmatic design) and a geometrical design (canonic design). They also deal with symbolic meanings of objects as resemblances to other objects (typologic, analogue). The relationships among all terms introduced by Saussure, Peirce, Morris, and Broadbent are summarized in Figure 3-1.

Figure 3-1: Relationship between Saussure, Peirce, Morris, and Broadbent's semiotic components. Based on Broadbent, 1974. p.908.



This figure indicates the relation between forms or designs and their associated meanings. It suggests variant utilities of different aspects of semiotics, i.e., icon as defined by Pierce and canon and analog as defined by Broadbent. Two of Morris's themes, semantics and syntactics, are similar to those of signified and signifier of Saussure. They are represented on the axis, X and Y, because they do not differentiate the relation between object or object syntax and referent (meaning). An object or object syntax represents the signifier whose signified can range from likeness to arbitrary associations with the referent. Morris's third term, pragmatics, represents a third dimension to semiotics. However, because Saussure, Peirce and Broadbent's terms do not refer to the relation between the user and sign, it is not applied to the diagram.

Semiotic components as presented in Figure 3-1 have been defined in the previous two sections according to linguistic and social scientific views. Figure 3-2 is a summary of Morris' linguistic definition of his tripartition theme, the urban geographical redefinition, and the application of each semiotic division in this research. This figure forms a guideline for this research because it comprehends the main urban components (form, meaning (function, symbols), and people's appreciation of the built environment). Others discussed works of semioticists are fitted within Morris' tripartition.

3-2-3. Urban Environment as Dynamic Semiotic Systems

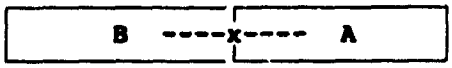
"Our lives are governed by our abilities to 'read' place identities and their spatial relations" (Bjorklund, 1986, p.39). Places as urban form contain social structure (Hillier and Hanson, 1984) or social message (Klapp, 1974) presented as functions or meanings of places and place relationships. To read the meaning associated with place identity, is to understand the function related to its traditional form. Geographical semiotics consider form-function-meaning-human behaviour of urbanscapes

and streetscapes even more broadly. The urbanscape/ streetscape is a combination of sign systems used communicatively in daily life. One experiences different sign systems as he moves from one place to another or shifts intention from one environmental aspect to another. Places often have signs that convey more than one meaning, which may be even different from that of the original function sign. The door as an object is generally known as the spot that separates inside (A) from outside (B). The 'A' and 'B' have a relative meaning (syntactics). Each of A and B is a sign or a sign system(s). This kind of relation between spaces is symmetric, as indicated in Figure 3-3 (Hillier and Hanson, 1984).

Figure 3-2: The study framework according to Morris' tripartition of semiotics.

Semiotics	Morris' Definition	Geographical Definition	Application
Syntactics Signifier	Sign objects and the relations among signs	Formal properties of physical and social environment as construed by society.	Search for architectural and urban design features: house features: windows door, hall, etc. neighbourhood elements: i.e., public streets, corner store, parks,etc. Social embedment: control of space as a form of security, isolation responsibility, etc. integration among spaces as a from of share, connection uncontrol, etc.
Pragmatics	Relation between users and signs	Appreciation of the built environment	Preference and satisfaction with: house feature, urban element, house types, and neighbourhood layout. Expressed by: change of space characteristics, maintenance of the existing built form, moving out from one house type or neighbourhood layout to another
Semantics Signified	Relation between signs and meanings	Relationship between spatial present signs (environment and people) and what they denote to the users	Search for meanings associated with house features and neighbourhood elements whether are symbolic, iconic, typologic, human interactive, etc.

Figure 3-3: Symmetrical relationship between A = inside and B = outside. x = door.



'A' could be the room and 'B' the hall way; 'A' is the house and 'B' the adjacent street; or 'A' the city centre and 'B' the periphery. As an example, in traditional Middle Eastern cities, doors are used to separate the dead-end street (*Zwkak*) from a secondary artery (*Hara*). In this case, a division consists of a number of houses that share a common *Zwkak*. Doors must be 'read' carefully to distinguish signs associated with a house from those signifying the social values enhanced by streetscapes.

Any stranger passing door 'x' on a dead-end street 'A' is questioned. 'X' is then the spot where a stranger who passes from 'B' to 'A' is transformed to a guest and the inhabitant of the house to a host. This geographical semiotic (or signs in the spatial form) is implicitly (and explicitly) conventionally coded, meaning it has a symbolic form readily decodable by interpreters when perceiving it. Meanings of these signs are understood by strangers differently than the inhabitants. This is because cultural and personal contexts differ according to role, purpose, or intent of each individual. For the inhabitant, 'x' represents a passage, nearby home, security, privacy, self-identity, warm bed, freedom, one's personal kingdom, and relaxation; while for the stranger it signifies the divide between public and private. Namely, it distinguishes outside from inside. Besides their basic functions as places for residing and shopping or moving, 'A' and 'B' have different meanings when read by different people. People's interaction with 'B', 'x', and 'A' signs, called pragmatics--meanings that are better comprehended by the users' preference and satisfaction with such signs. Do inhabitants feel satisfied with the communicative activities (semantics) provided by door 'x'? Or do they prefer different design solutions to maintain the (semantic) meanings that are provided by signs 'x' to an outsider in 'B'?

The creation of a door 'x' to separate outside 'B' from inside 'A' is a reflection of the inhabitants' need to create a high level of control over their private zones. However, through time, 'x' may accumulate a deeper meaning than just an object that separates 'A' from 'B'. For example, during the troubled period of Fatimid, 1067, in Damascus, the use of a door for *Zwkak* (an alley) and *suk* (a bazaar's sub-division) was initiated to provide a safer environment. But, with the end of this period, the use of the door continued as an important feature of the city's identity. Thus, geographical semiotics is a continual process and not a static construction.

In this example, the letters 'A', 'B' and 'x' are used as the denotations of objects (referents). When indicating a letter, we refer in this study to the objects that the letters denote, symbolize. The syntactics and the abstract representation of 'A' and 'B', are ignored by some researchers, such as Norberg-Schulz (1974), who see syntactics empty. It is adopted in this study because each of these objects has a number of syntactic meanings that are believed to be semiotically as important as semantic and pragmatic signs.

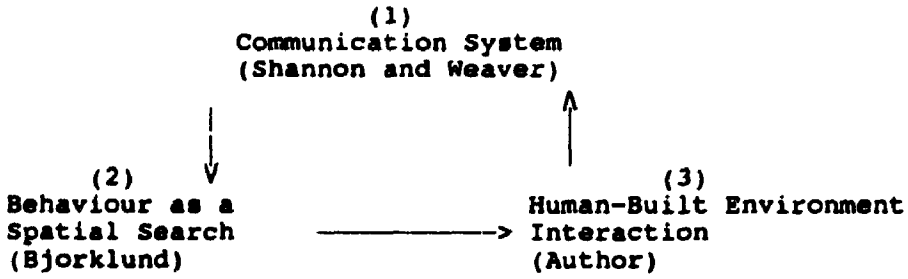
Geographers, as well as urban designers, do not separate the sign from the object system. In other words, context and environment matter to actual users of the environment. Hence, geographical semiotics is semantically considered, which means the study of logic behind the relationship among objects (such as 'A' and 'B') or an object and the place. The logic of the relationship between objects 'A' and 'B' represents the social structure (inside/outside or private/public relation) of the built spatial environment 'X' that includes 'A', 'B', 'x',..., and 'y'. For purposes of understanding the process of reading and interacting with the built environment, the rest of this chapter introduces a model of "Geographical Semiotics as a Communication Process".

3-3. Geographical Semiotics as Communication Process

The underlying idea in this study is that information presented in the built environment is perceived and cognitively understood by the users who behave accordingly (act and interact with others and with the built environment). Interaction with the built environment is presented in many ways such as the actual use(s) of space, constant evaluation of its form(s), and the change of its physical and symbolic characteristics to fit users' changing needs. Users selectively read the information, as they tend to ignore what is not needed and focus attention on the part(s) that serves their purpose.

The action and interaction with the built environment are geographical semiotic processes governed by three phases: 1) communication system, 2) perception/cognition, and 3) human-environment interaction. These phases are illustrated in Figure 3-4 as a model of geographical semiotics as a communicative process.

Figure 3-4: Model of Geographical Semiotics as a Communication Process



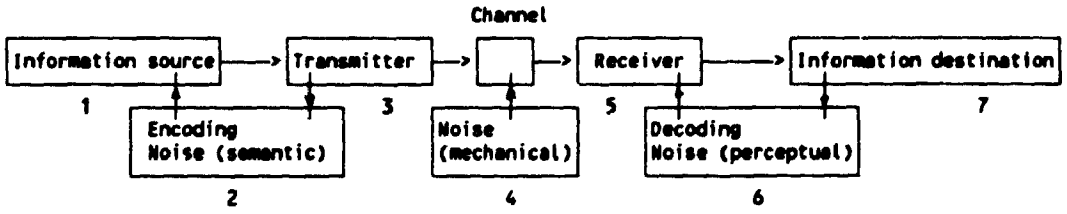
The perception of information presents a communicative process that will be discussed according to Shannon and Weaver's model, "Communication System" (1967). The perception/cognition of the received information as a selective process will be discussed according to Bjorklund's model of "Behaviour as a Spatial Search" (1983). The built environment is a multi-information system, formed and presented as a living environment. Finally, the author introduces a model of "human-built environment interaction" to illustrate the production of environment as a result of shaping,

organizing, and marking spaces to provide information for ongoing use. The following sections discuss these models as separate and as interconnected realities.

3-3-1. Model of Communication System

The built environment consists of a number of signs that reveal iconic, indical, symbolic meanings. Communication with such information is detected and interpreted in a system through which information is transmitted from the information source, through a communication channel to a destination, as illustrated by Shannon and Weaver's model (1967) shown in Figure 3-5).

Figure 3-5: Model of Communication Systems, Shannon and Weaver, 1967.



This model specifies a seven-step process to form the information system: (1) A person wishes to send a message to another person (step 7). (2) This message is an idea, thought, or concept about people, objects, or places. The message has to be encoded in a verbal and/or nonverbal language for transmission to the person (step 7) to receive it through detection by tactile, kinaesthesia, visual, auditory, and/or olfactory sensory systems. Encoding is limited to symbols in the language. For example, in actual nonverbal contact we may not clearly express intention or interest through appropriate gestures, use of colours, or architectural styles. The message is distorted or only partially understood. This distortion is called "semantic noise". Where the signifying elements are distinct with minimal distortion in their transmission and interpretation, the communication is effective. Where there are ambiguities or distorted signs, communication is distorted or ineffective.

Coded information also can be transmitted by minor or major re-encoding in step (2). Minor encoding is done by modification of components of the chosen language used originally to encode the message; for example, adopting a different syntax of, say, a minaret to have it more prominent within the surrounding built area. The major encoding is a change in the coding of the message from one language to another; for example, provision of a sign such as a canopy above an entrance to signify a special entrance for presumably a special event occurring there.

The transmitter is the object or object relations used to convey the coded message (step 3). It can be a personal or social gesture, a TV display, a radio transmission, a computer display, printed matter in a book, a building style, or the layout of a city. (Step 4) the "Communication Channel" is the passageway of the coded message, starting from the transmitter (step 3) and ending at the receiver (step 5). It is the air for the TV and radio broadcast, and the monitor for the computer. For urban signs, Wittig (1974) referred to space as the communication channel, because the observability of streetscapes, buildingscapes or people is possible within a limited distance related to human visual ability to see clearly.

Some distortion may occur in the communication process, which interrupts or weakens the original message. There is evidence of distortion in many examples, such as the long distance effect on a radio broadcast or the dominance of a modern mega-structure on nearby historical buildings. Noise, as evident in the latter example, is contextual in that the visual object domination of one over the other is disturbing. Also, aesthetic qualities of a historical building, whether as a landmark or as a sample of an earlier period, may be lost in the context of a mega-structure, which focuses on a new landmark to epitomize the present (Cavaglieri, 1980).

In steps (5), (6) and (7), the receiver is the decoder. The human brain receives the signal through the sensory systems and cognition transforms the signals into constructs and other cognitive forms. Steps (5), (6), and (7) form a loop, explained clearly by Bjorklund's (1983) model of "Behaviour as a Spatial Search".

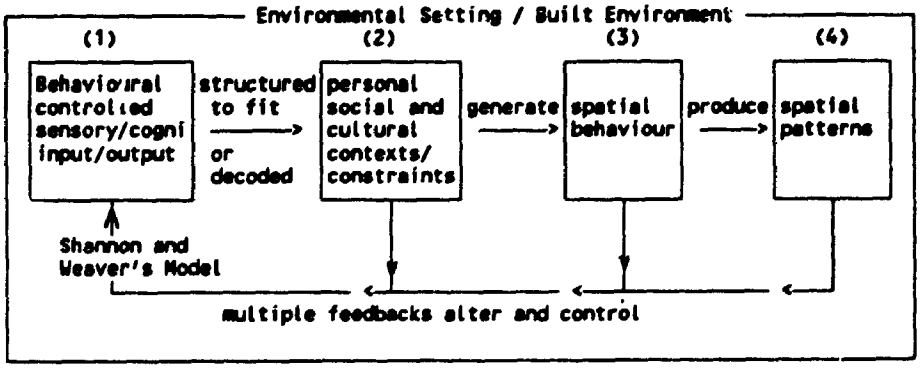
3-3-2. Behaviour as Spatial Search

Messages come from a set of signs (or interpretable behaviours/ forms) in the built environment. There must be a human effort (mental/body energy) consciously or unconsciously directed to its generation/transmission. Bjorklund's model of "Behaviour as a Spatial Search" uses ideas drawn from cognitive psychology, laying out the process as having four components (as shown in Figure 3-6):

1. Sensory systems (individuals).
2. Culture (groups).
3. Spatial behaviour
4. Environment (settings/context).

Component 1: According to Bjorklund (1983), operation of our behavioural-controlled sensory systems (as search mechanisms), messages are constructed in the mind-body. The control of sensory systems is generated by one's intention towards an information system(s) of the built environment, ignoring the others. One focuses his/her sensory system on the information system(s) that serves his/her purposes related to social activities, economic benefits, entertainment, etc.

Figure 3-6: Simplified Bjorklund's model of "Behaviour as a Spatial Search", 1983, p. 93.



Component 2: Inside-the-self, the message (the information derived from the environmental setting) is decoded (interpreted) or structured to fit in light of cultural and personal contexts and constraints. Cultural and personal contexts and constraints connect variables, such as architectural types, symbols, and colours, at both the personal and group levels. Interpretation of the decoded message is not always the same because it is done in the light of personal and past acquired information which perpetually changes the ground of perception.

Messages have denotive and connotative meanings. Based on an individuals' constructs, past experience, cultural and personal contexts, people evaluate messages differently according to their interests, objectives, and values (Bjorklund, 1992). The connotative meaning may be primary in some instances. The denotive meaning of a Minaret, as a distinctively elevated structure, used to be seen first as a place where the *muezzin* called for prayer, and second as a place symbolizing Islam. With the use of electrical speakers, switching between denotive and connotative meanings of "minaret" over time occurred. Currently, the functional meaning becomes less important. Although, in this example, the information acquired from the object changed, the form of the object is still respected, and continues to newly built mosques. In 1980, Professor Ra'if M'hana, Architectural School of Damascus, suggested the elimination of the minaret as its <u>function</u> (calling for prayers) has disappeared. Most of the students who see the importance of its symbolic meanings could not imagine a mosque without such a structure.

Components 3 and 4: Mental activities (perception-cognition) are reflected in our intentions and decisions to select appropriate information and to adapt to change in the surroundings. Actions resulting from mental activities are subsumed by the term 'spatial behaviour' or human action and interaction in the built environment. Spatial behaviour is determined in relation to personal and cultural constraints. Cultural constraints are revealed by the shared social principles, conventions,

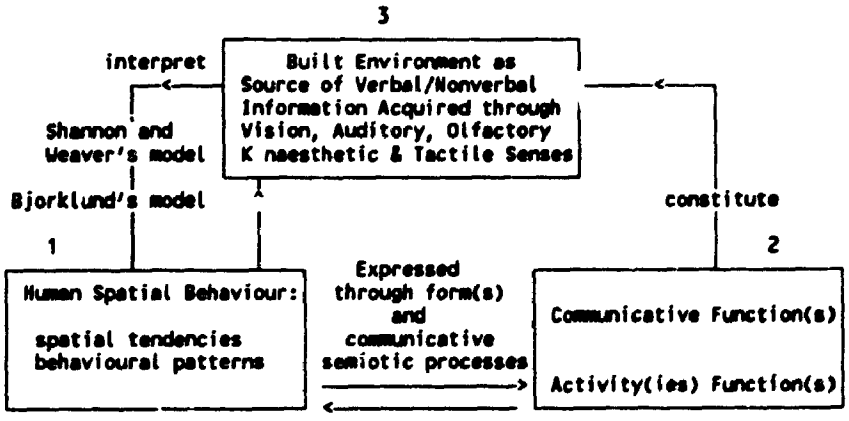
rules, laws as what an individual can or cannot do in a certain urban setting. One may need to adjust behaviour to conform to the prevailing norm and patterns of what is acceptable, expected, permitted, and prohibited (Rapoport, 1976, 1977, 1982). Spatial patterns are an outcome of spatial behaviour.

Shannon and Weaver's Model of "Communication System", and Bjorklund's Model of "Behaviour as Spatial Search" help to understand the process of acquiring information, understanding it, and behaving accordingly. A product of spatial behaviour is the built environment.

3-3-3. Human Built Environment Interaction Model

Human-environment relationships should not be disregarded when constructing the built environment, a semiotic product. In this study, the built environment is represented as a key factor affecting personal satisfaction and social interaction. A summary of the interrelated interaction between us and our built environment is illustrated by the author in Figure 3-7.

Figure 3-7: Human Built Environment Interaction Model



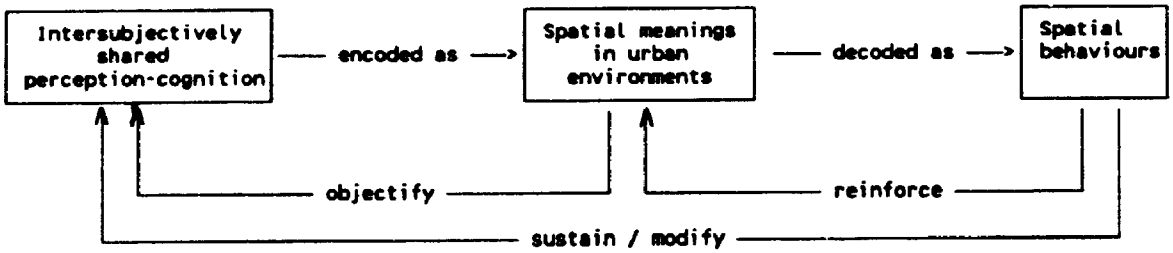
This model has three components: 1) human spatial behaviour expression through 2) form and function constituting 3) the built environment. Component 1: Spatial behaviour is the driving force of environmental perception/cognition, spatial tendencies, and behavioural

patterns. Perception/cognition of environment is the selected acquisition of information from one's surroundings (Bjorklund's model) through the sensory systems (vision, auditory, olfactory, kinaesthesis, and tactile). This acquired information is constructed and evaluated (to make sense to us) in relation to cultural, social, and personal contexts. Results are revealed in consciousness, as intention towards the objects and their relations, and through interactions with other people in transformed and constructed environments.

Human consciousness and intentions towards objects (human/ environment) and their relations are continuously evaluated to fulfil individuals' spatial tendencies organized into behaviours. Spatial tendencies are: connectivity with, nearness to, and separateness from others or things. These are expressed singly and in combination in accordance with the group's spatial tendencies which can be referred to as intersubjectively perception-cognition (Bjorklund, 1992). According to Bjorklund's formulation of the geographical semiotic process, as shown in Figure 3-8, acquired information is organized into meaningful signs and relationships to represent objects/energy in the built environment for 1) control and 2) integration. Regarding control, the intention of significations/signs is to present security, personal space, and public/private territory. Also, behaviour is controlled through choices and constraints of what is expected, allowed, and prohibited. Regarding integration, different parts (spaces) of the environment are given substance through forms, layouts and other design features that make up the urbanscape. This product of urbanscape reflects desired identities of persons and groups to be with others and to share space. In Damascus, young men conduct some social activities on sidewalks and streets; for adult males coffee houses represent the principal beyond-the-house centre for socialization. For the family, the house represents the focus of its domestic activities and interaction pattern with non-family members through use of its guest zone, family zone, and service area. All forms

(sidewalk, coffee house, and family dwellings) convey information that the sidewalk and coffee house are multi-centring places while the family dwelling is a family (private) centring place.

Figure 3-8: The geographical semiotic process (Bjorklund, 1992, p.5).



Component 2. Maintenance of a certain pattern of spatial behaviour is supported by **physical forms** (buildings, streets, and neighbourhoods) of the built environment. These are designed, developed, and modified to fit current and changing needs of families. For example, a bedroom is an enclosed and protected section that provides a highly private zone within the house; or a wall, fence, or gate that surrounds the house establishes a claim to territory and prevents trespassing.

Physical forms (built environment) create settings within which **activity** occurs. **Functions** are manifestations of spatial needs that are socially and culturally defined, such as benches, houses, water fountains, light fixtures, and streets. These physical forms are not simply objects. They have functional purposes signified by objects that transform spaces socially. As such, the objects and their relations also have a **communicative function**. The communicative functions relate the object(s) taken as signs to convey messages. A system of beliefs characterize Islamic society as a form that, for example, is embedded in mosques. They serve as markers of group territory.

The inner courtyard has an activity function; it is the heart of the house where contact with nature and isolation from outsiders is

fulfilled, and has a communicative function, through which people recall descriptions of paradise presented as a garden (trees and plants), pure water (fountain), and heaven (sky). Thus, every object in the built environment has both activity functions and communicative functions. Sometimes these become different from the intention of its original construction, as information is reinterpreted in social contexts.

Component 3: The formation and enhancement of communicative and activity functions constitute a meaningful built-environment. Through its elements, the built environment represents sources of information, through such features as location, arrangement, symbols, colour, form, and activities, which can be acquired through our behaviourally directed visual, auditorial, olfactory, kinaesthetic, and tactile senses (Shannon-Weaver's model and Bjorklund's Behavioural-search model).

Relationships between spatial behaviour and physical structure are presented by a process of development and adjustment of physical structures over time. However, spatial behaviour alters the physical form of the built environment by designating a different meaning and/or use. This happens through a process of re-development and transformation in use and meaning over time. The physical structure, through both its communicative and activity functions, is understood (communicated with) by the observer who, as a result of receiving and interpreting the information, expresses an appropriate behaviour. In Islamic society the mosque, the lattice window, water fountain, etc. all convey information about particular Islamic principles, such as prayer, privacy, charity, etc.

There is always feedback that reflects loss, gain, and transformation of information in this process. Feedbacks are essential to replicate activities and action and interaction among individuals and between individuals and environment over time. Feedbacks also reflect changes in information and its interpretation through time. Changes in a

person's or group's degree of satisfaction and preference for certain environmental events occur as persons undergo developmental, social, political, and economic changes.

3-4. SUMMARY

It is the necessary nature of human beings to search for meanings to organize, to comprehend, and to interact effectively with others in any environment. The built environment is a form of communication, and becomes transformed by users into transactional places. Geographical semiotics is the study of the process through which people construe information from their environment to focus, support, and direct their attention, appropriate to their own interests and, to some degree, to the expectations of society and its culture. Through this geographical information process human behaviour sustains / modifies, objectifies and reinforces what is pertinent about urban environment to ongoing users.

The study of semiotics in urban and geographical contexts is derived and developed from linguistic works. This chapter briefly reviewed the works of Saussure, Peirce, Morris, and other social scientists and the application of their ideas to urban geography and architecture. Morris divides the study of semiotics into syntactics, pragmatics, and semantics. Because his tripartition of semiotics takes into consideration the three possible relations between sign, meaning, and users, his theme is considered good enough to adopt as the framework for this research. Within this framework the other discussed works of semioticists, Saussure, Peirce, Broadbent, and Eco, introduced in this chapter, are applied as explanatory for semiotic presentation. Figure 3-2 is the guideline for following Chapters that analyze and discuss semiotics [syntactics (Part II), pragmatics (Part III), and semantics (Part IV)] of the four different residential areas of Damascus (Tradition, Attached, Detached, and Elevator), introduced in Chapter 2.

PART II. SYNTACTIC ANALYSES

The built environment, with its forms, its functions, and relationships among its inner and outer spaces, is intentionally created to accommodate a people's daily needs for eating, sleeping, working, socializing, etc. Every space, in its form and its spatial relationships, is designed or designated to serve specific activity/ies. This is to say that, forms and their relationships are function signs. In other words, the built environment presents information verbally, nonverbally, and behaviourally to occupants. This information is obtained by reading functions, activities of spaces, and relationships between urban residents (and between residents and strangers). When such information is understood, the built environment is considered effective and liveable; and, if not, it is considered lifeless.

Geographical semiotics are divided, in Chapter 3, into three components: 1) syntactics, formal properties of the physical and social environment as construed by society; 2) semantics, the meaning that is denoted to these signs; and 3) pragmatics, the appreciation of these signs by their users. This part of the study focuses on the first component -- design features and their connections present social functions. It is according to these functions that syntactic comparison among different built environments is possible.

Damascus reflects the co-existence and integration of a set of design features[1] that give each neighbourhood a geographical and a social identity. The maps of Damascus, Figures 2-2, 2-20, and 2-21 in Chapter 2,

[1] Lynch discussed the importance of the co-exitance of urban features in creating a livable city (1966).

show neighbourhoods with syntactically different characteristics, four of which are identified according to time of construction, house design, and form of street network open-space[2]: Traditional compact house, Attached walk-up apartment, Detached walk-up apartment, and Elevator apartment.

Urban elements and house features of all Damascene neighbourhoods are divided into two different groups. The first group, which is the main concern of Chapters 5 and 6, concerns outdoor and indoor spaces and the social rules that govern their connectivities. The other group concerns design features (neighbourhood elements and house features) that are commonly used in their types. These design features are introduced in Chapter 4.

[2] Different societies have developed different patterns of street networks such as, the grid pattern (Philadelphia), the radial pattern (Paris), the Organic pattern (Old Damascus) (where hierarchical straight and curved streets are linked in branch form), or the circulatory pattern (New Damascus) (grid or quasi-grid pattern is the main street order, while the secondary and lower hierarchical street order is a mix of the organic and radial pattern).

CHAPTER 4. DESIGN FEATURES

4-1. Introduction

Every building, street, and neighbourhood consists of a number of specific design features whose combination typifies a particular kind of house design, street pattern, and neighbourhood layout. It is necessary to determine the design features that constitute each type of the four selected types of neighbourhoods in order to achieve the following intentions: 1) prepare two lists, one for house features and the other for neighbourhood elements, for use in Part III and IV to analyze the observed signs, pragmatic signs, and semantic signs; 2) determine what typifies newly designed forms; and 3) examine in detail what is lost and what is gained between these various domestic design types.

4-2. Method and Tables

The method followed in this chapter is to break down the design features constituting each residential neighbourhood, then tabulate the results for comparison among four residential types. In the light of these tabulated results, other tables are also formed to indicate the typical features for each residential type, and point to design features that have been lost or gained by each residential type.

The breakdown of features of each residential area was achieved with the help of six colleagues working in City Hall and the Architectural School of Damascus. House and neighbourhood plans were taken from City Hall. Photos were taken by the author at several residential areas for analysis. While constructing the tables of design features of each neighbourhood, the author and his colleagues visited several residential types to insure consistency in the listing of representative design

features. As a result, Table 4-1 and Table 4-2 list design features of the four residential areas: 66 house features and 60 neighbourhood elements.

Table 4-1 shows five categories of house features. These are house topography, room form, window form, house components, and building materials. Table 4-2 shows six categories of urban elements: 1) commercial areas, 2) public buildings, 3) street pattern, 4) street characteristics, 5) mosque/church, and 6) building construction materials. The sign "X" indicates house features and urban elements that are typical of each residential type, called T,A,D, and E.[3]. At the end of each category there is the subtotal of design features, and at the bottom of each table there is the total number of design features for each residential area. Discussion of these tables goes through, first: total differences in numbers, and then, total differences in kinds of house features and neighbourhood elements among the four residential areas.

4-3. Differences in Number of Design Features

Inspection of summation of house features in Table 4.1 and neighbourhood elements in Table 4.2 show that differences in number of design features among the four residential areas have relatively little variation. The main differences appear clearly in three categories: house components, house building materials, and neighbourhood building materials. Difference in number among all categories fluctuates from 0 to 4 between all residential types. Total house features common to each neighbourhood shows that the Traditional house has 9 more features than the three designs of modern apartments (A, D, and E). However, modern styles share a similar total number of features. Also, the total number of neighbourhood elements shows that Traditional neighbourhoods have from

[3] Features of houses, such as sunny/dark, airy/stale, cool/hot, warm or cold, are not physical components, but they are important when one selects the location of activities (e.g., sleeping, living, reading etc.) inside his house. These factors are considered in chapter 8 to determine the degree of observation.

TABLE 4-1:
House design features for four house forms, T,A,D, and E.

	T	A	D	E
House Topography:				
open plan (modern)	X	X	X	X
traditional plan	X	X	X	X
more than one level	X			
one level	X	X	X	X
Subtotal	4	3	3	3
Rooms Form:				
spacious	X	X	X	X
medium	X	X	X	X
small	X	X	X	X
high ceilings	X	X	X	X
medium hight ceil.	X	X	X	X
low ceilings	X	X	X	X
single height	X	X	X	X
multi height	X			
decorated walls	X	X	X	X
plain walls	X	X	X	X
decorated ceilings	X	X	X	X
plain ceilings	X	X	X	X
wall closets	X	X	X	X
no wall closets	X	X	X	X
arched ceilings	X	X	X	X
square rooms	X	X	X	X
unsquare rooms	X	X	X	X
decorated wallpaper	X	X	X	X
Subtotal	18	17	17	17
Windows Form:				
light hole		X		
open into courtyard	X			
open onto outside	X	X	X	X
lattice window	X	X	X	X
no lattice window	X	X	X	X
arched	X			
rectangular	X	X	X	X
big	X	X	X	X
medium	X	X	X	X
small	X	X	X	X
open on setback			X	X
Subtotal	9	8	8	8
Components:				
entry hall	X	X	X	X
guest room	X	X	X	X
corridor(s)	X	X	X	X
inner room		X	X	X
kitchen	X	X	X	X
dining room	X	X	X	X
bed room(s)	X	X	X	X
living room(s)	X	X	X	X
main room (ka'a)	X			
bathroom	X	X	X	X
inner ctyd(light h)	X	X		
fountain	X			
trees and plant	X	X	X	X
garden		X	X	X
Iwan	X			
Mqhraka	X			
open balcony		X	X	X
semi-glazed balcony		X	X	X
glazed balcony		X	X	X
used roof	X	X	X	
pitched roof	X			
stairs	X			
storage	X	X	X	X
garage, car port				X
joint flat roof		X	X	X
flying room	X			
wind catcher	X			
well	X			
Subtotal	21	18	17	17
Building Material:				
wood	X			
stone	X			
adobe	X			
concrete		X	X	X
tile	X	X	X	X
Subtotal	4	2	2	2
TOTAL	56	48	47	47

TABLE 4-2:
Urban design elements for the four neighbourhoods, T,A,D, and E

	T	A	D	E
Commercial Area:				
strip design	X	X	X	X
centralized design	X	X	X	X
corner store:				
(sammen/bakal)	X	X	X	X
grocery (keddary)	X	X	X	X
butcher shop	X	X	X	X
bakery	X	X	X	X
fastfood restaurant	X	X	X	X
coffee house	X	X		
pharmacy	X	X	X	X
barber shop	X	X	X	X
clinic	X	X	X	X
bath	X			
Subtotal	12	11	11	10
Public Buildings:				
kindergarten	X	X	X	X
elementary school	X	X	X	X
secondary school	X	X	X	X
high school	X	X	X	X
library	X	X	X	X
museum	X			
tombs (mekam)	X			
mosque/church	X	X	X	X
Subtotal	8	6	6	6
Street Pattern:				
straight	X	X	X	X
windy	X	X	X	X
narrow	X			
medium width	X	X	X	X
large	X	X	X	X
dead-end (private)	X			X
partially covered	X			
not covered	X	X	X	X
with tree	X	X	X	X
street with sidewa	X	X	X	X
pedestrian route	X	X	X	X
stony	X			
asphalt	X	X	X	X
Subtotal	13	9	9	10
Street Characteristics:				
water fountain	X	X	X	X
fountain	X	X	X	X
door for alleys	X			
dome	X	X	X	X
minaret	X	X	X	X
arch/mokarnes	X	X	X	X
cultural poster	X	X	X	X
neon signs	X	X	X	X
painted sign	X	X	X	X
gate(bldg entrance)		X	X	X
parking lot	X	X	X	X
bus stop	X	X	X	X
park	X	X	X	X
elevator				X
stairs	X	X	X	X
inside fence		X	X	X
Subtotal	14	14	14	15
Mosque/Church:				
old style	X	X		
new style	X	X	X	X
close by	X	X	X	X
inner court-yard	X	X	X	
garden		X	X	X
Subtotal	4	5	4	3
Building Material & Character:				
wood	X	X	X	X
stone/marble	X	X	X	X
adobe	X			
concrete/cement	X	X	X	X
attached	X	X		
detached			X	X
low height	X			
medium height		X	X	
high rise				X
Subtotal	6	5	5	5
TOTAL	56	49	48	49

7 to 8 more elements than any type of the three Modern neighbourhoods (A, D, and E); while Detached neighbourhoods have only one element which differs from Attached and the Elevator neighbourhoods.

Comparison of house features and neighbourhood elements (Tables 4-1 and 4-2) in different residential types indicate small differences in number between all paired neighbourhood types. Practically, these differences cause considerable effects on residential characteristics. Let's look at two architecturally similar houses, one with the following extra design features: balcony, garden, inner courtyard, large window, wall closets, open plan, or duplex. Two questions must be addressed: Do both houses function similarly? Do they provide similar satisfactory social atmosphere?

Basically, house features and neighbourhood elements have functional, symbolic, and/or social utilities. In light of these basic utilities, it is useful to look at few examples in order to answer the above questions: 1) Inner courtyards create a distinct relation between inside and nature, while maintaining at the same time a high level of privacy. 2) Balcony or garden creates a direct relation between inner spaces and outer spaces (streets), but lowers the level of privacy. 3) Plain ceilings when decorated provide an elegant touch, making the space pleasant. 4) Large windows strongly connect inside with outside and increase the amount of light entering the room. As a result, rooms appear more spacious, and outside space becomes more connected to the inner space. Similar examples can be presented regarding neighbourhood elements. Differences in the number of house features or neighbourhood elements among the four residential areas cannot be ignored, and constitutes an important factor in assessing social functions and symbolic meanings.

4-4. Differences in Kinds

Difference in the number of design features alone does not constitute the only way in which the syntactic differences of the four residential areas is based. Difference in the kind of design features also provides a valid basis. Two largely similar residential areas may differ in one design feature: one has an open plan and the other has a traditional plan, one has large rooms and the other has small rooms, or one has a garden and the other has an inner courtyard. However, a single difference in a design feature may completely change its social function and symbolic meaning. This is also true of largely similar neighbourhoods with one difference in kind.

Differences in numbers of designs features, thus, are not sufficient to examine differences between residential areas. It is important to determine differences in kinds in order to find out how design features characterize traditional and modern designed residential areas. Doing so, what is lost and gained of design features among the four domestic residential types can be discussed. From Tables 4-1 and 4-2, Table 4-3 is formed to indicate all design features that are distinctive in kinds of house features and neighbourhood elements among all residential types.

Numerical differences in kinds of house features and neighbourhood elements between all pairs of four residential types presented in Table 4-3 are summarized in Figures 4-1. Presentation of these figures can be read as follows: the number in each cell refers to numerical differences in kinds of house features or urban elements that are typical to the residential type (T, A, D, or E) indicated on the left hand side, and are not typical to the residential types (T, A, D, or E) indicated on the top row.

Table 4-3: Kinds (X) of house features and neighbourhood elements relative to different residential design types: T, A, D, E.

House Features	T	A	D	E	Nghd Elements	T	A	D	E
more than level	X				coffee house	X	X		
multi height room	X				public bath	X			
open on courtyard	X				museum	X			
arched window	X				tombs (*Makam*)	X			
open on the set back			X	X	covered street	X			
inner room		X	X	X	stony street	X			
Ka'a (main room)	X				door for alley	X			
inner courtyard	X				gate		X	X	X
fountain	X				elevator				X
garden		X	X	X	fence		X	X	X
Iwan	X				mosque:				
Mashraka	X				old/courtyard	X	X		
balcony:		X	X	X	new/garden		X	X	X
semi-glazed		X	X	X					
glazed		X	X	X	adobe	X			
light hole		X							
use roof	X	X	X		attached	X	X		
joined flat roof		X	X	X	detached			X	X
pitched roof	X				low height	X			
stairs	X				medium height		X	X	
garage				X	high rise				X
flying room	X								
wind catcher	X				narrow st.	X			
well	X				dead end st.	X			X
wood	X								
stone	X								
adobe	X								
concrete		X	X	X					

Figure 4-1: Numerical differences in kinds of house features and urban elements between pairs of residential types.

House Features

	T	A	D	E
T		16	17	18
A	8		1	2
D	8	2		1
E	9	3	1	

Nghd Elements

	T	A	D	E
T		10	13	12
A	4		3	4
D	5	1		1
E	6	4	3	

As shown in Figure 4-1, Traditional residential neighbourhoods have 16, 17, and 18 distinctive house features, and 10, 13, and 12 distinctive urban elements not associated with Attached, Detached, and Elevator

residential neighbourhoods. These distinctive features typify Traditional residential designs. Also Figure 4-1 shows three modern neighbourhoods that have, respectively, 8, 8, and 9 distinctive house features and 4, 5, and 6 distinctive urban elements not found in the Traditional neighbourhood. Finally, the three Modern residential types have a few house features and urban elements that distinguish them from each other, ranging from 1 to 4. Not all the found house features and neighbourhcod elements are typical to their residential types. Often the found features and/or elements are adopted from elsewhere. Search for the typical and the adopted design features for every residential type requires a reformation of the data into Table 4-4.

Table 4-4: House features and neighbourhood elements that typify newly built residences. X = incorporated into Traditional form.

House Features	Adopted by T	Nghd Elements	Adopted by T
open plan	X	trees/plant	X
one level house	X	side walk	X
no wall closet	X	asphalt	X
decorated wall paper	X	neon sign	X
bath room	X	parking lots	X
dining room	X	park	X
tile	X	new style mosque	X
		concrete	X
medium height ceiling		straight street	
single height		large street	
inner room		not covered street	
garden		gate (building entrance)	
balcony: (open,semi-glazed,glazed)		elevator	
joint flat roof		fence	
concrete		mosque with garden	
		detached buildings	
		medium height building[4]	
		high rise building	
Total 14		Total 18	

[4] Traditional Islamic Middle Eastern buildings are medium in height in some cities, such as in Cairo, or as high rise buildings in places, such as in Yemen.

4-5. Modern Within the Traditional

Table 4-4 shows that there are 14 house features and 18 neighbourhood elements common to modern residences. Of these modern sign features, 7 house features and 8 neighbourhood elements are recently incorporated into traditional residences, as indicated in Table 4-4 by the sign X. Some of these design features either replace old traditional features with modern ones, such as open plan, one level house, no wall closet, decorated wall paper, asphalt and concrete; or are additions to Traditional characteristics, such as bath room, dining room, tile, street tree/plants, side walk, neon signs, parking lots, parks, and new style mosque.

If a common design feature to one residence is incorporated into another residence, this design feature also becomes an iconic sign by transfer. It has features that are reminiscent of another residential type. This is best exemplified by incorporation of modern design concepts of open plan, dining room, or concrete building material into Traditional houses. Progressive transfer of these features as icons of the past may be a warning sign of the continuous demolishment of the originality of Traditional built environments as much as they are evidence of the ongoing adaptive capacity of Traditional environments.

In addition to incorporation of some modern design features into Traditional residences, Table 4-4 shows other design features (7 house features and 10 neighbourhood elements) that are typical to modern types and not yet incorporated into Traditional built environments. These design features are: medium and single height ceilings, inner room, balconies, gardens, joint flat roofs, concrete (as house building material), straight large streets, non-covered streets, gates, elevators, fences, and detached, medium/high rise buildings. Of these design features, "elevator" and "high rise building" are only used in the Elevator building type.

The traditional design features are indicated in Table 4-1, and exclude the modern design features shown in Table 4-4. Some of the traditional design features are: traditional plan, the multi-level house design, traditional decoration, inner courtyard, inner window, attachment of buildings, public bath, coffee house, dead end street, covered street, use of adobe, wood, and stone as building materials, and stone covered streets.

4-5. Traditional within the Modern

As modern residential developments started as attached apartments, some traditional design features were employed without questioning their functional validity. These design features were thickness of walls (40-120 centimetres), height of buildings (2-3 stories), and organic narrow-street pattern (Figure 2-17). However, modern construction and planning principles reduced wall thickness to 10-30 centimetres and allowed an additional floor to be added. The street pattern was transformed from an organic system to a grid to accommodate automobile traffic. Streets in Modern neighbourhoods became large enough to accommodate vehicular traffic and side walks for pedestrians. Other traditional design features that appeared in Attached building neighbourhoods are: light holes (taken from the inner courtyards of traditional designs) that made use of inner windows for back rooms possible, attachment of buildings, closeness in neighbourhood buildings, and the building of minarets on street axes.

Detached building neighbourhoods, as a second stage of progressive development of modern residential types, do not show any design features of traditional origin, except height (3 stories). The final modern residential type, Elevator apartment buildings, adopted pedestrian roads and dead-end streets from traditional areas. In recent years, all Modern built areas have widely adopted two other traditional design features: decorations and stone facades. As adopted traditional design features prove to be few, the new development represents an obvious jump from the

traditional style. Climatic and social suitability of the new modern residential types, therefore, needs critical examination.

4-7. Modern within the Modern

Over time, Detached buildings adopted all the original modern features from the Attached building style (such as inner room, balcony, concrete construction). Elevator-style designs, in turn, adopted all the Attached and Detached original features (such as gardens, detachment of buildings, and uncovered streets). So, the three modern building types stand with few distinctive features from each other. Distinctiveness among the three modern building types is mainly due to the adoption of some of the traditional design features discussed above.

4-8. SUMMARY

This chapter discussed differences in the number and kinds of house features and urban elements between Traditional neighbourhood and the other three types of modern neighbourhoods. From tabulations of design features, it was found that changes in the Traditional built environment are due to introduction of some Modern sign features either to replace old design features or to add Modern features to the Traditional characteristics. Among the three Modern residential styles (Attached, Detached, and Elevator apartments), there are few differences in kinds, and thus these are few distinctions in their basic design features.

CHAPTER 5. SYNTACTIC ANALYSIS, OUTDOOR SPACE

5-1. Introduction

Urban syntactics, as a semiotic component, is a formal property of physical and social environments as they are construed by society. This formal property is a set of rules that governs the assemblage of outdoor units into a coherent spatial arrangement. These rules are:[5]

1) Rule of Privacy: nearness, not separation, and connection with other family members and residents.
2) Rule of Security: separation and protection from others.
3) Rule of Segregation: separation of male from female, and family members from guests.
4) Rule of Non-interference: seclusion from 'outside' eyes, providing harmonious relationships with others.
5) Rule of Integration: aggregation, meeting, and encounter.
6) Rule of Control: control of interference, inaccessibility.
7) Rule of Publicness: aggregation, connection with strangers, unbelonging to a group or a place, unprotected.

This Chapter looks at urban elements as physical structures that represent foci of attention of users and that are collectively a part of the social pattern framework. Syntactic analyses examine these culturally-socially based rules that govern the use of spaces to maintain different degrees of inhabitant-inhabitant's and inhabitant-stranger's relationships. As syntax in linguistic terms refers to rules governing the formation of sentences to convey messages among people, these urban social rules convey messages for both inhabitants and strangers. A narrow

[5] The development of these rules is based on Hillier and Hanson's concepts of space control and space integration (1984).

street with one entrance and no outlet to others, means that "this place is not for public use; it is for inhabitants and insiders to use". These rules, therefore, are a way of presenting intended information by sign elements that are embedded in urban designs. Usually these underlay architectural designs and urban planning to create public, semi-public, semi-private, and private places. Architects, planners, developers, builders, and householders all play a role in providing the evidence needed to convey necessary information about place to outsiders as well as to insiders.

The method for syntactic analyses is based on Hillier and Hanson's work in 1984. Their work examines the actual arrangements of outer and inner spaces, represented through the connectivities of urban spaces. The location of an open space, whether a street or a square, takes its community significance according to its degree of connectivity: integration and controllability of the place. Both spatial integration and controllability are essential concerns that determine the other socio-spatial rules: privacy, security, segregation, non-interference, aggregation, and publicness.

The integration of a space can be described as the number of turns one needs to make when moving from one space to reach any other space in the space/street network[6] (Hillier and Hanson, 1984, p.108). Where a space is integrated with other spaces of a street network, the space becomes accessible for both inhabitants and strangers. Such a space can be ruled by its public characteristics, such as size of street, existence of squares, and a number of exits. Also, publicly ruled spaces, integrated spaces, have potentiality for public activities, such as commercial, social, and administrative. Both integration and publicness

[6] There is an important factor that is not considered in this study: the time that is needed to move from X1 to X2. This factor is left out because neighbourhood parts are within walking distance, around 10-15 minutes.

are expressed by design elements embedded intentionally in the environment. When perceived and cognitively understood, they effect insider-outsider's interactions.

Controlled spaces are those spaces with a high degree of inaccessibility. Controllability of a space is determined by the number of connections with neighbouring spaces (Hillier and Hanson, 1984. p.109). The controlled space is governed by rules of privacy, security, segregation, and non-interference. When a space is controlled (has minimum accessibility from neighbouring spaces), inhabitants are secluded from strangers, and thus they can enjoy a high degree of privacy. Also, a controlled space is secure as a result of segregation and protection from strangers' interference.

Embedment of these social rules in the built environment lies between both integration of the place with others and control over the spaces. When a place is integrated (easily accessible from different parts of the residential area) and uncontrolled (accessible from many neighbouring spaces), it is not secure, private, nor secluded. On the other hand, when a place is not integrated but is controlled, then it is governed by privacy, seclusion, non-interference, and security. How can both controllability and integrality of a space be measured? The answer for this question forms the basis for a hypothesis:

> There is no significant difference in the degree of effective connectivity (integration and control) of spaces among the four types of neighbourhoods.

5-2. Controllability of Open Spaces

Controllabiiity measures the relationship between a space and its immediate neighbours. The term 'controllability' proposes that the less connection a space has with other immediate spaces, the higher its seclusion; and that the higher the seclusion of the space, the higher the

ability of its inhabitants to control it and feel secure. [7] The cul-de-sac represents the extreme case. Strangers are more likely to feel uncomfortable entering such a space[8] while inhabitants feel at home and protected.

When the characteristics of different street arteries are alike, it is difficult for a stranger to distinguish between them. To avoid confusion for those who are unfamiliar with the area, written 'dead-end' signs are usually found at the entrances of these streets. The use of written signs is a way to reinforce streetscape evidence or to correct the weakness of the streetscape to reveal a critical social distinction of the urban street space, whether private or public. An effective urban street space informs people denotively and connotively of significant social meanings of the space.

5-3. Measurement of the Degree of Control

The logic behind this measure relies on the previous proposition: the higher the number of connected spaces with space X, the less

---

[7] The term controlled space may not figure as social control like a policeman who monitors and sometimes checks the ID of those who come in and out. It does engender the feeling of being in one's own private place where one has the right to give a questioning look or to avoid unfamiliar faces.

[8] Jacobs (1961) points out that inhabitants' interaction within their space increases when they are familiar with each other. Of course, this results from frequent meetings and eye contact among inhabitants and the related absence of unfamiliar faces. Gehl (1987) elaborates on how the physical design of a neighbourhood helps to create eye contact and socialization among people. Newman (1972) sees the absence of a semi-private or transactional zone between private and public spaces as weakening the defence of space, causing an increase in crime rates and vandalism.

Some characteristic differences between public and semi-private places are seen as signs of difference. For example:

(a) the degree of noise: It is expected to be high in commercial areas and low in neighbourhoods and parks. The absence of playing areas for children causes the streets to be used as an alternative and may possibly lead to intolerable noise. Furthermore, adults shout from time to time at these kids to keep quiet. Also, the use of the semi-private narrow streets by cars causes noise and pollution.

(b) the relationship between the users: The personal distance in public space is as large as the physical space can permit; people tend to ignore the presence of other people by turning their side or back where the personal distance is less than the front (see Tuan, 1974, and Hall, 1966).

(c) the degree of crowdedness: It is high in public area during the business hours (7:30am - to 6:00 pm) with the exception of parks.

controlled and more accessible it is according to Hillier and Hanson's scheme, 1984. The determination here is based on a route's accessibility to adjacent areas, its immediate neighbours. In Figure 5-1, space X gives a full share to the space that is connected with it. This share is called the Given Value. In Figure 5-2, space X is connected with more than one space (to "n" number of spaces). Therefore, space X gives each neighbouring space a share equal to 1/n.

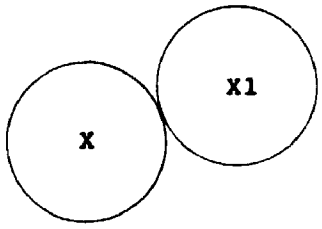


Figure 5-1: Space X gives its neighbouring space X1 a share of 1. e.g., cul-de sac.

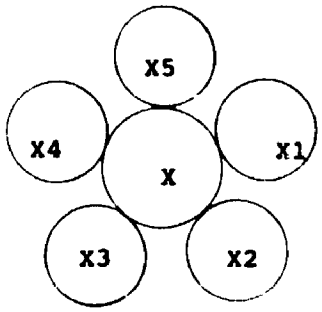
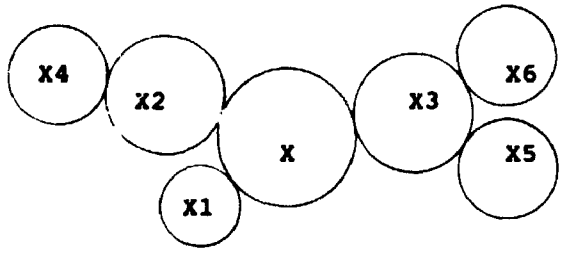


Figure 5-2: Space X gives each of its neighbouring spaces X1, ..., X5 a share of 1/5, e.g., main street.

One more step is needed to find out the degree of controllability of a space (C.value). This is the summation of all Given Values (G.Value) that are received by the space from its neighbouring spaces. For example, in Figure 5-3, the space X receives the following G.value: 1 from X1, 0.5 from X2, and 0.33 from X3. The total values of 1.83 that space X receive represent its degree of control value (C.value). In similar calculation, the C value for space X1 (a dead-end street) is 0.33; and space X2 is 1.33.

By examining this example, we observe that space X3 is the only exit for all people living in dead-end spaces X5 and X6. The same can be said for X1 and X4. Also, it is noticed that X1, X4, X5, and X6 have the smallest control value, while X3 has the highest. As a conclusion, the smaller the control value the higher the control of this space.

Figure 5-3: A proposed study to illustrate the computation of the degree of control (C.Value).



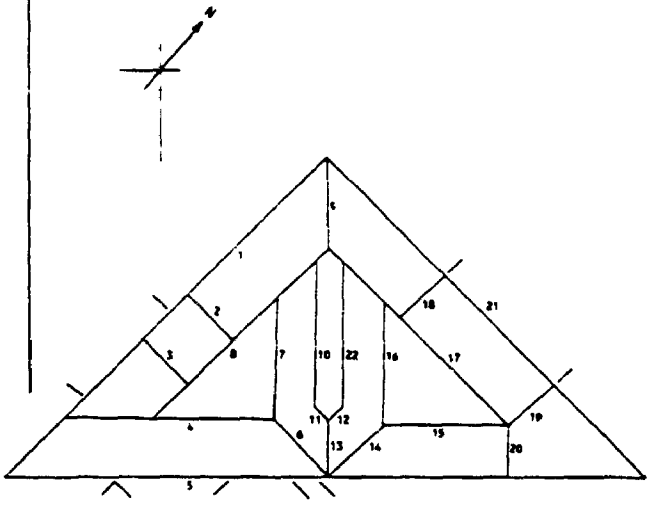
Space ID:	X	X1	X2	X3	X4	X5	X6
Given value:	0.33	1.00	0.50	0.33	1.00	1.00	1.00
Control value:	1.83	0.33	1.33	2.33	0.50	0.33	0.33

For the four selected neighbourhoods, the space-connection system is more complicated. The calculation, though laborious, is simple. The first step is to transfer the maps to simpler ones where spaces are represented by their axes. A curved space is represented by broken lines. The second step is to give every line (or space) an ID number (see Figures 5-4T, A, D, and E).

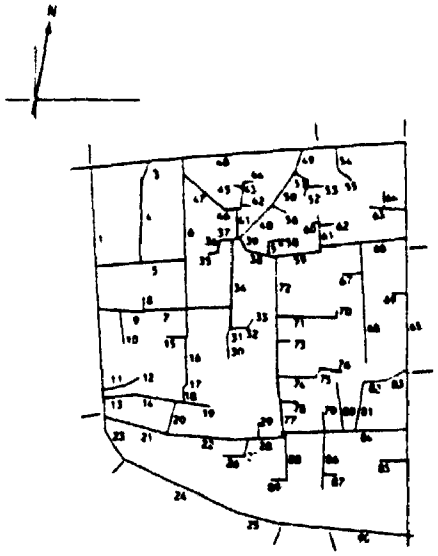
Three conditions illustrated in Figure 5-5 need to be considered before calculating the given (G) and control (C) values:

A. Every dead end street is connected by an exit street and by various private spaces (the surrounding residences). It is therefore shared by 2 spaces; and the G. value for each dead end street is always equal to 0.5.

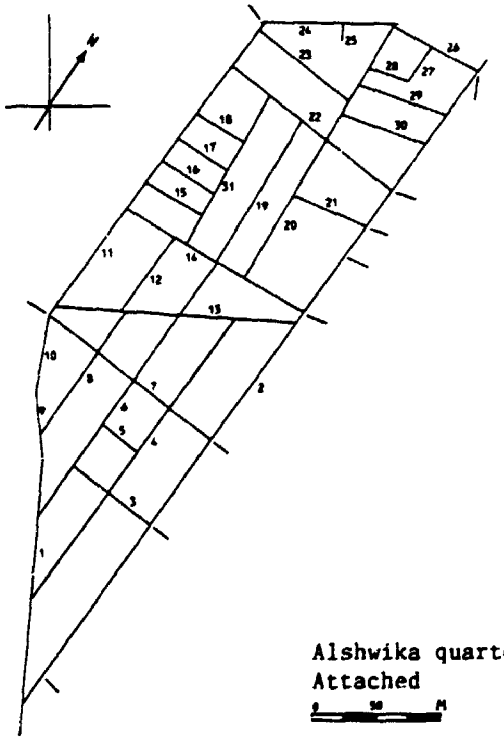
B. The street X that has a T junction with X1 gives two shares to X1, considering that one in space X may go to the left part of X1 or to the right part; so, X1 left and X1 right are considered two separate spaces; and X, thus, gives two shares to X1 (one for the possible right turn and one for the possible left turn).



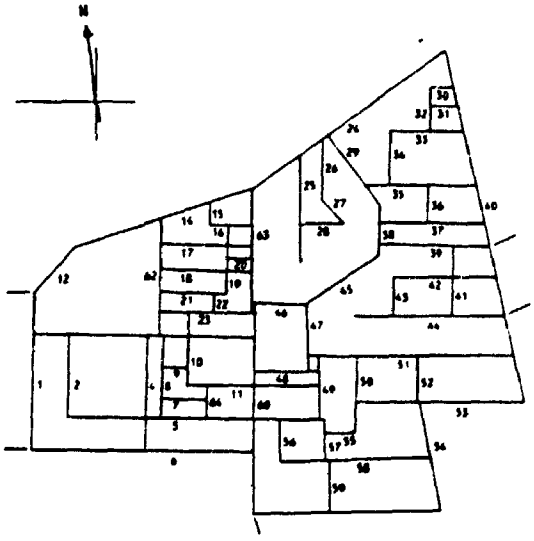
Alkassah quarter,
Detached



Alamin quarter,
Traditional



Alshwika quarter,
Attached

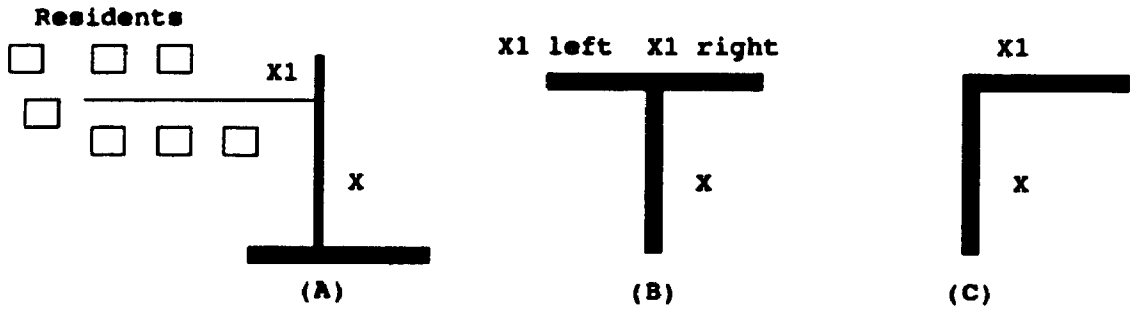


Aladawi quarter,
Elevator

Figures 5-4: ID numbers assigned for segments of street open spaces of T, A, D, and E neighbourhoods.

C. Following the logic in B, if space X has an L junction with X1, X gives only one share to X1. It is considered that X1 is either a left or a right space that gives pedestrians only one option, or one direction. Computing both Given Values and Control Values, Tables 5-1 to 5-4 are constructed for each space of the four neighbourhoods, and then a summary of these four tables is indicated in Table 5-5.

Figure 5-5: Three ways of connecting street X with street X1: (A) X1 is a dead end street, (B) X1 and X form a T-junction for left and right movement options, (C) X1 and X form L-junction for one movement choice, left or right.



5-4. Discussion

Examination of the distribution of social meanings of route spaces to determine different levels of controllability has produced a characterization of low, moderate, and high-controlled spaces. This provides analyses of different possible inhabitant-stranger encounter situations, and not inhabitant-inhabitant encounters[9]. To understand the distribution of these different social street spaces, it is important to determine their thresholds. Thresholds help to classify values in Tables 5-1, 2, 3, and 4 into three levels of controllability representing low, moderate, and high-controlled spaces.[10]

---

[9] The inhabitants of one street are strangers for the inhabitants of other streets within the same neighbourhood.

[10] For public and semi-public spaces, there are no defined criteria to select control value thresholds. Hillier and Hanson (1984) used 25, 50, and 75 percent of the control values. The mean value can also be used as a threshold but it divides the spaces of a resident area into two zones only, that is above or below the mean value. Since the street network has (according to many researchers such as Newman, 1972) up to three zones: public, semi-public, and semi-private, the mean values are not considered here.

Table 5-1: A TRADITIONAL NEIGHBOURHOOD. Spaces' ID, their Given and Control Values of *Alamin* Quarter.

ID	GIVEN VALUE	C VALUE	ID	GIVEN VALUE	C VALUE
65	0.0833	3.1348	86	0.3333	0.6111
84	0.1111	2.4833	11	0.3333	0.6000
1	0.1000	2.2327	13	0.3333	0.6000
28	0.2000	1.8944	21	0.2500	0.6000
43	0.2500	1.8333	5	0.2000	0.6000
6	0.1667	1.6917	14	0.5000	0.5833
48	0.1250	1.6580	19	0.3333	0.5833
22	0.2500	1.5333	83	0.3333	0.5833
37	0.2000	1.5333	63	0.3333	0.5833
50	0.2500	1.3333	4	0.3333	0.5333
40	0.2500	1.2833	3	0.3333	0.5333
77	0.2000	1.2333	41	0.2500	0.5333
61	0.2500	1.2000			
72	0.2000	1.2000	53	0.5000	0.5000
16	0.3333	1.1667	35	0.5000	0.5000
38	0.2500	1.1167	76	0.5000	0.5000
9	0.2500	1.1000	47	0.3333	0.5000
34	0.2000	1.0667	8	0.5000	0.4500
24	0.2500	1.0167	23	0.3333	0.4500
90	0.2000	0.9157	58	0.5000	0.3333
7	0.2000	0.8667	33	0.5000	0.3333
			87	0.5000	0.3333
52	0.5000	0.8333	89	0.5000	0.3333
75	0.5000	0.8333	29	0.5000	0.3333
46	0.3333	0.8333	55	0.5000	0.3333
18	0.3333	0.8333	70	0.5000	0.3333
51	0.3333	0.7500	26	0.5000	0.3333
57	0.3333	0.7500	64	0.5000	0.3333
20	0.2500	0.7500	30	0.5000	0.3333
49	0.2500	0.7083	12	0.5000	0.3333
36	0.5000	0.7000	67	0.5000	0.3333
39	0.3333	0.7000	44	0.5000	0.2500
71	0.3333	0.7000	45	0.5000	0.2500
31	0.3333	0.7000	42	0.5000	0.2500
74	0.3333	0.7000	56	0.5000	0.2500
68	0.3333	0.7000	10	0.5000	0.2500
27	0.3333	0.7000	60	0.5000	0.2500
32	0.3333	0.7000	62	0.5000	0.2500
59	0.2500	0.7000	78	0.5000	0.2000
82	0.5000	0.6667	73	0.5000	0.2000
17	0.5000	0.6667	15	0.5000	0.1667
66	0.2000	0.6667	79	0.5000	0.1111
54	0.3333	0.6250	80	0.5000	0.1111
25	0.3333	0.6160	85	0.5000	0.0833
88	0.3333	0.6111	69	0.5000	0.0833
81	0.3333	0.6111			
			Max		3.1348
			Min		0.0833

Table 5-2: An ATTACHED NEIGHBOURHOOD. Spaces' ID, their Given and Control Values of *Alshwika* Quarter.

ID	GIVEN VALUE	C VALUE	ID	GIVEN VALUE	C VALUE
2	0.0667	3.4079	7	0.1000	0.5214
11	0.0769	2.7900			
20	0.0909	1.7694	28	0.3333	0.4242
31	0.1250	1.2361	3	0.1667	0.2778
6	0.1000	0.9889	25	0.5000	0.2500
14	0.1111	0.9595	19	0.2500	0.2361
4	0.1111	0.8778	12	0.2500	0.2222
24	0.2500	0.8483	5	0.2500	0.2111
			16	0.2500	0.2019
13	0.1111	0.7714	17	0.2500	0.2019
26	0.2000	0.7409	15	0.2500	0.2019
9	0.3333	0.6167	18	0.2500	0.2019
1	0.2500	0.6111	23	0.2500	0.1678
22	0.1250	0.6095	29	0.2500	0.1576
10	0.2000	0.5817	30	0.2500	0.1576
8	0.1667	0.5444	21	0.2500	0.1576
27	0.3333	0.5333			
			MAX		3.4079
			MIN		0.1576

Table 5-3: A DETACHED APARTMENT NEIGHBOURHOOD. Spaces' ID, their Given and Control Values of *Alkassah* Quarter.

ID	GIVEN VALUE	C VALUE	ID	GIVEN VALUE	C VALUE
8	0.1250	1.6583	20	0.2000	0.7409
1	0.1250	1.5998	19	0.2000	0.6679
5	0.0909	1.5839	4	0.2000	0.6667
21	0.1429	1.4159	9	0.2500	0.5179
17	0.1250	1.3500			
13	0.1667	1.0909	16	0.2500	0.4917
15	0.2000	0.9417	7	0.2500	0.4917
6	0.1667	0.8742	10	0.3333	0.4583
14	0.1667	0.8742	22	0.3333	0.4583
			18	0.2500	0.2679
11	0.3333	0.8333	3	0.2500	0.2500
12	0.3333	0.8333	2	0.2500	0.2500
			MAX		1.6583
			MIN		0.2500

Table 5-4: An ELEVATOR APARTMENT NEIGHBOURHOOD. Spaces' ID, their Given and Control Values of the *Aladawi* Quarter.

ID	GIVEN VALUE	C VALUE	ID	GIVEN VALUE	C VALUE
40	0.0769	2.5524	57	0.2500	0.6333
63	0.1111	1.5929	49	0.1667	0.6095
5	0.1000	1.5076	15	0.3333	0.5833
60	0.0909	1.3083	37	0.2000	0.5769
24	0.1429	1.3047	44	0.2500	0.5769
62	0.1111	1.3000	42	0.2000	0.5769
3	0.1000	1.2492	16	0.2500	0.5694
1	0.2000	1.0083	29	0.2500	0.5595
58	0.2000	1.0000	64	0.2000	0.5167
19	0.1250	1.0000			
38	0.2500	0.9833	55	0.3333	0.5000
47	0.2000	0.9262	21	0.1667	0.5000
35	0.1667	0.9103	39	0.2000	0.4936
14	0.2000	0.9028	25	0.3333	0.4762
46	0.2500	0.9020	52	0.2000	0.4762
51	0.1429	0.8936	48	0.2000	0.4576
			43	0.3333	0.4500
28	0.3333	0.8333	11	0.1667	0.4242
32	0.2500	0.8333	34	0.3333	0.4167
12	0.3333	0.7833	4	0.1667	0.4000
61	0.1250	0.7576	36	0.2500	0.3667
23	0.1667	0.7437	17	0.1667	0.3611
6	0.2000	0.7077	18	0.1667	0.3611
45	0.3333	0.7000	9	0.2500	0.3333
8	0.1667	0.7000	22	0.2500	0.3333
53	0.1667	0.6936	30	0.3333	0.3269
54	0.1667	0.6917	31	0.2500	0.3269
10	0.1667	0.6833	59	0.2500	0.3250
27	0.5000	0.6667	56	0.3333	0.3000
33	0.2500	0.6602	20	0.2500	0.2361
41	0.1667	0.6500	2	0.3333	0.2000
26	0.3333	0.6429	7	0.2500	0.1667
50	0.2500	0.6429			
			MAX		2.5524
			MIN		0.1667

Table 5-5: Number and percentage of low, moderate, and high control spaces for T (Tradition), A (Attached), D (Detached), and E (Elevator) neighbourhoods.

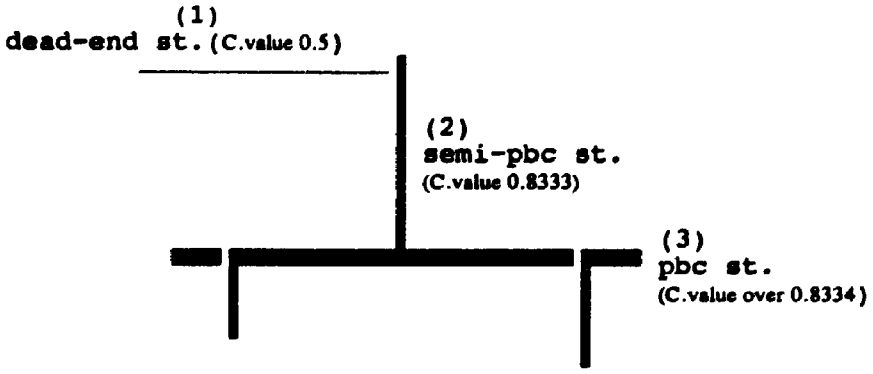
Level of Control	Number of spaces				Percentage of each space type			
	T	A	D	E	T	A	D	E
Low Control	21	8	9	16	24	26	41	25
Moderate Control	36	9	6	25	40	29	27	40
High Control	32	14	7	22	36	45	32	35
Total	90	31	22	63	100	100	100	100

The lowest number in the above C.value Tables was 0.0833 (found in the Traditional area), whereas the highest was 3.1348 (found in the Attached apartment area). Between the highest and the lowest C.values, the thresholds for the three different types of control spaces need to be defined.

To select the threshold for the high, moderate, and low-controlled spaces, we seek the case of the minimum connection for any type of controllability of spaces. This is because the less connection a street has, the higher its given value to neighbouring spaces. Taking this condition into consideration, Figure 5-6 illustrates the minimum connection of three levels of controlled spaces. That is a dead-end street for the high-controlled space; one dead-end street and a public space for moderate controlled space; and three connections for a low-controlled space.

The dead-end street is an extreme case of high-controlled space because it has only one single exit street. This exit street gives a maximum C.value of 1/2 (0.5) to the dead end-street; minimum connection

Figure 5-6: Minimum connections with three types of streets: the high-controlled (1), the moderate-controlled (2), and low-controlled (3) spaces.



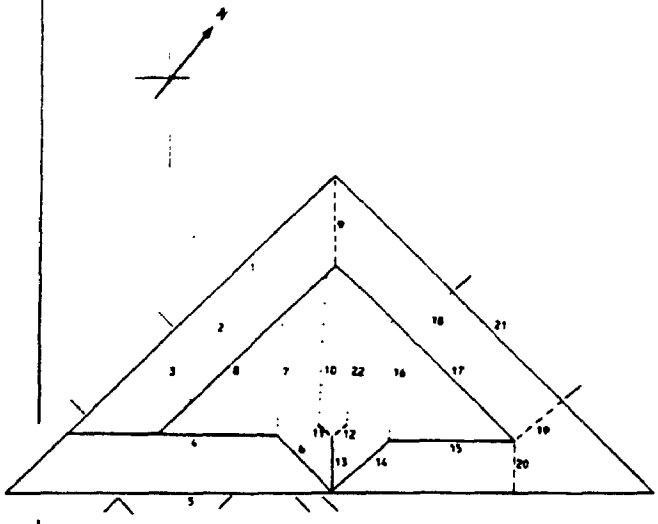
with the exit street represents the maximum Given Value to the dead-end street. Therefore, a C.value of 0.5 is selected as the maximum threshold for high-controlled space. The moderate-controlled space, or exit street, is connected with one high-controlled space and one low-controlled space. The high-controlled space (dead-end street) gives the maximum Given value of 0.5 to the moderate-controlled space. The low-controlled space has the minimum connection; therefore it gives the exit street a 1/3 share = 0.333. The C.value for the exit space in this example is the sum of both received Given values (0.5 + 0.333 = 0.8333), representing the maximum C.value or threshold between moderate-controlled space and low-controlled space. In brief, between the highest and the lowest C values indicated in Tables 5-1, 2, 3, and 4, the classification of three levels of controllability of spaces are defined as follow:

3.1348 - 0.8334 = low-controlled space
0.8333 - 0.5001 = moderate-controlled space
0.5000 - 0.0833 = high-controlled space

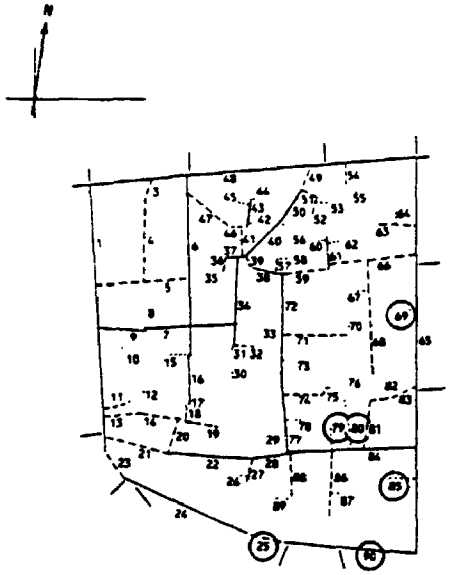
Considering these three zones of social spaces, C.values in Tables 5-1, 2, 3, and 4 were recorded on controllability maps of the studied neighbourhoods: Figures 5-7T, A, D, E.

Systematic analysis of these maps shows different connectivities of social spaces: low, moderate, and high-controlled spaces. Examination of each type raises several questions. Are low controlled spaces located in the core, and/or in the periphery? Are connections radial and/or by parallel lines? Are they clustered or evenly spread? Do connections cross the neighbourhood by long and/or short lines; and how do they cross the area?

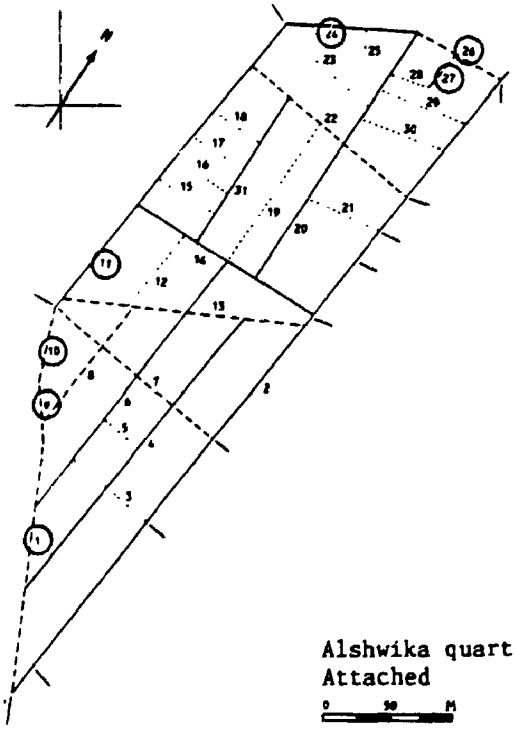
Figure 5-7T shows that uncontrolled spaces, which form 24 percent of all spaces, were located on the periphery and in the core of the neighbourhood, with some linking route spaces such as 7, 9, and 84. These were the longest route spaces of all. They were not clustered.



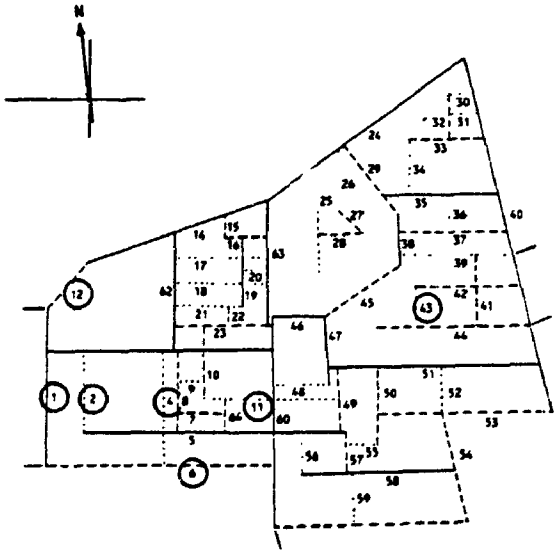
Alkassah quarter,
Detached



Alamin quarter,
Traditional



Alshwika quarter,
Attached



Aladawi quarter,
Elevator

Figures 5-7: Spaces with 3 different levels of controllability for T, A, D, and E.

——— Low control
– – – – – Moderate control
..... High control
○ Spaces specifically referred to in the discussion

The moderate-control route spaces, which are of relatively medium length, represented 40 percent of total spaces; while the high-controlled spaces, which are of relatively short length, represented 36 percent. High-controlled spaces are only dead-end route spaces.

Figure 5-7A shows that most low-controlled spaces are parallel to space 2 with the exception of spaces 14 and 24. The Low-controlled route spaces are long and represent 26 percent of total route spaces. The moderate-controlled spaces, which represent 29 percent of the sample, are concentrated in two areas, one to the southwest and the other to the northeast, away form the centre. Like in the case of Figure 5-7T, they are medium in length. Finally, most of the high-controlled route spaces, representing 45 percent, are randomly distributed. They are mostly short with the exception of space 3, 19, and 23, which are of medium length.

Figure 5-7D shows that the low-controlled spaces are located on the peripheral rectangle and the inner rectangle[11] with links by spaces 6, 13, and 14, which radiate from the centre of space 5. These route spaces are long and represent 41 percent of the sample. In this map, not only the high-controlled spaces (32 percent) are short and medium but, also the moderate-controlled spaces (only 27 percent). Both are distributed widely over the area. However, the core is dominated by high-controlled spaces of medium length and has a simple north-south orientation.

Figure 5-7E shows similar percentages of low, moderate and high-controlled spaces to that of the traditional neighbourhood. Even the distribution of the spaces at the three different levels of controllability for both areas are alike. There is, however, one exception, the high-controlled spaces in Figure 5-7T are all dead-end streets while in Figure 5-7E the high-controlled spaces are links between

[11] Notice in the Detached neighbourhood, the shape of rectangular street layout does not generally differ from the grid shape. Both shapes, whether rectangular or square public or semi-public streets, are based on main rings as main streets, and the links among them vary from public, semi-public, and semi-private streets.

two low-controlled and/or moderate-controlled spaces.

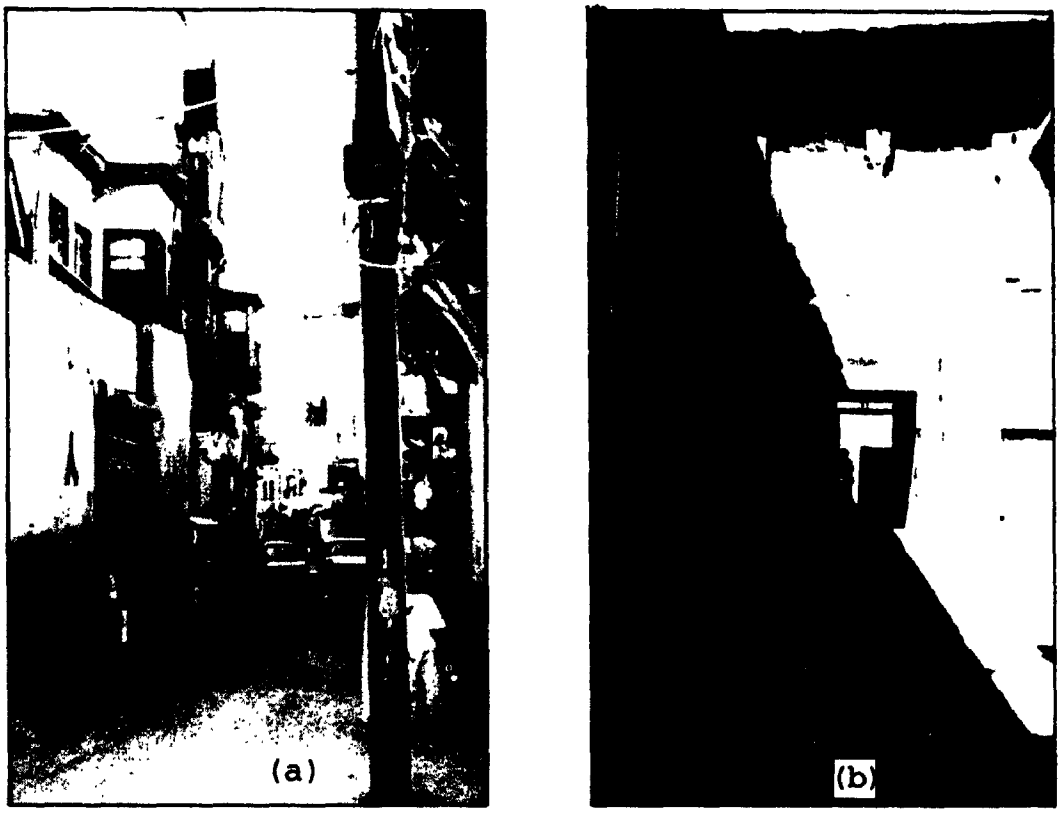
In Figure 5-7T, spaces, 69, 79, 80, and 85 (circled on the Figure) have the smallest C.values. These routes represent dramatic shifts from public to semi-private spaces. There is an absence of intermediate, or semi-public zones[12]. Strangers notice the social meaning of these dead-end spaces as high-controlled-space, and thus these spaces serve their function properly, keeping strangers away. However, high-controlled spaces in Figure 5-7E, such as 2, 4, 11, and 43 (circled on the Figure), may attract wanderers to the place, as a short cut, which reduces the ability of inhabitants to be secluded, to feel private, and to protect their neighbourhood from unwanted intrusion. These places, thus, are likely to become governed by public interference rules (commercial activities where strangers are encountered).

5-5. Degree of Integration

Urban route spaces in any district are conceived by city planners and urban designers as having a hierarchical order of route space functions. There are main streets, secondary streets, and side streets (and/or dead-end streets). In practice, the hierarchical order may be different from what the designer envisioned. A street considered as a secondary street may be over-crowded or over-used by both inhabitants and strangers; for example, Kasser *Alhjjaj* (see Figure 5-8a). A high-controlled space (i.e., a private space) may become a less-controlled space (or secondary street); for example, the inner-court yard of *Alassbahea* Mosque (see Figure 5-8b). Constant complaints by the inhabitants may occur if their joined spaces are misused; especially when there are trespassing problems, or traffic congestion, and car accidents because of a lack of clear proper traffic signs.

---

[12] Semi-public space is also called the intermediate zone or the filtering zone because, it works on reducing or filtering the types of users who enter the place. In a relative sense, the number of strangers becomes less in this zone than the number of the inhabitants using the place.



Figures 5-8: (a) The use of Alhajjaj street, a semi-public street, and (b) the use of inner courtyar of Alassbahia mosque, a private space, as a semi-public or public space. This use results from the common tendency to minimize the distance travelled. Damascus, photo by the the author, 1991.

Figures 5-9: The use of steel poles (a) in Alshwika neighbourhood, and (b) in Alkassah neighbourhood. This use signifies non-vehicle space to prevent cars from using the streets. Damascus, Photos by the author, 1991.

Street landscapers and urban designers modify some open-space features to prevent their misuse, or to encourage proper use. For example, they provide signs indicating permitted vehicles; or put flower beds or steel/wooden poles to prevent all types of vehicles from entering the route space (see Figure 5-9a). One of the reasons for misuse of space is the common tendency to minimize effort when moving from X1 to X2. This is observed every day when some people step on grass or trespass on private property, as the case shown in Figure 5-8b.

Briefly, for pedestrians, route space functions properly when it fulfils their needs to move easily. For residential occupants, space functions properly when they can control it. And, for city planners and urban designers, space serves its function properly when it is not misused, deserted (especially main streets) or overused (especially side or semi-private streets). Taking into account all of these views, global analysis of the four selected neighbourhoods provides opportunity to document different types of routes with different degrees of accessibility. The study of space-integration requires the search for spaces with different degrees of integration in respect to each space in the neighbourhood. As mentioned earlier, the integrated spaces are those spaces governed by social rules (privacy, publicness, seclusion, security, and non-interference), which are semiotic.

5-6. Measurement of the Degree of Integration (DI)

In respect to both residents and outside users, a space serves its designated function if it has proper connections with the other spaces of the neighbourhood. On one hand, a private space is properly connected if it has indirect links with crowded spaces to reduce the probability of being used by strangers. On the other hand, the main street is well connected with the same or lower-ordered spaces if this connection is sufficiently direct to make the movement through spaces easy for both residents and strangers.

The Degree of Integration (DI) of any space is the measurement of the degree of connectivity of this space with other open-spaces in the neighbourhood. It varies according to the number of turns needed to move from place X1 to place X2. If a space is connected immediately with other spaces, then the Degree of Integration is 0, maximum integration (see Figure 5-10). Whereas for a space that is connected in a linear pattern with other spaces, the Degree of Integration is 1, minimum integration (see Figure 5-11). The formula that is used to calculate the degree of Integration for X in both cases of Figures 5-10,11 will be explained in the following section.

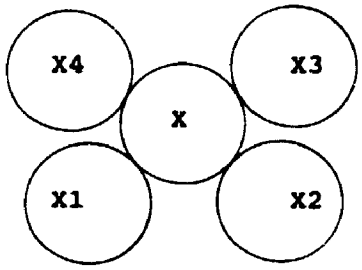


Figure 5-10: direct connection of space X with spaces X1, X2 X3, and X4. DI is 0.

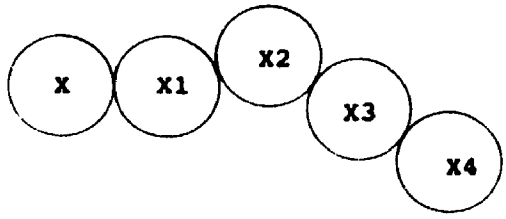


Figure 5-11 : indirect connection of space X with spaces X1, X2, X3, and X4. DI is 1.

5-7. Degree of Integration (DI) Tables

Each map of the four neighbourhoods was used to calculate the Degree of Integration by the following steps: first an ID number was given to each space (the same IDs that were given to the spaces in the above section, "control values", are used here, see Figure 5-4). Second, the Degree of Depth (DDx) was calculated by counting the minimum numbers of intervening spaces between space x and every other space in the area. Third, the Mean Value (MV) of DDx for space x was calculated by dividing its DDx by the number of spaces (K) less 1; for space x, this is shown by the equation:

$$MV = \frac{DDx}{K - 1}$$

Where:

DDx	Degree of Depth for space x
MV	Mean of the DDx for space x
K	number of spaces

Last, the Degree of Integration (DI) for space x with respect to every other space was calculated as follows:

$$DI = \frac{2\,(MV - 1)}{K - 2}$$

Where: DI Degree of Integration for space x
MV Mean of the integration Value for space x
K number of spaces

MV and DI are calculated for every space. A low value (close to 0) means the space is "integrated", while a high value (close to 1) means that the space tends to be "segregated" from the other spaces in the neighbourhood. These steps were carried out on the four neighbourhoods, T, A, D, and E to construct Tables 5-6, 7, 8 and 9.

5-8. Consideration of Different Sizes of Neighbourhoods

Size of the neighbourhood affects the Degree of Integration for every space in the system. Therefore, to compare the DI values for a number of neighbourhoods, an additional step is required to eliminate the effect of size on DI. This conversion should not affect the distribution of spaces.

According to Hillier and Hanson (1984, pp.109-113), to eliminate the size effect, one should look at spaces of the neighbourhood from "Y". "Y" is defined as the carrier of all spaces or the outer space that forms the border of the neighbourhood. Then one can calculate RDI, the Real Degree of Integration, for any space from Y root. The DI values that are presented in Tables 4-6,7,8, and 9 can be converted to RDI by a simple formula:

$$RDI = \frac{DI}{D_k}$$

Where: RDI Real Degree of integration for any space from Y root
DI Degree of Integration
D_k a constant for k spaces (presented in Hillier and Hanson, 1984)

Table 5-6: *Alamin* Quarter, a TRADITIONAL NEIGHBOURHOOD. Spaces' Ids, their Degree of Integration Values (DI) and Real Degree of Integration Values (RDI).

ID	DI	RDI	ID	DI	RDI
53	0.1371	1.5069	9	0.0958	1.0523
76	0.1348	1.4817	41	0.0953	1.0467
42	0.1343	1.4761	27	0.0950	1.0439
45	0.1343	1.4761	78	0.0924	1.0158
44	0.1343	1.4761	51	0.0922	1.0130
12	0.1330	1.4620	80	0.0912	1.0018
58	0.1272	1.3975	46	0.0909	0.9990
35	0.1269	1.3947	88	0.0907	0.9962
33	0.1259	1.3834	79	0.0907	0.9962
30	0.1256	1.3806	86	0.0904	0.9934
18	0.1244	1.3666	81	0.0904	0.9934
70	0.1223	1.3442	74	0.0899	0.9878
67	0.1210	1.3301	21	0.0889	0.9766
26	0.1190	1.3077	8	0.0884	0.9709
10	0.1182	1.2993	22	0.0878	0.9653
19	0.1175	1.2908	59	0.0876	0.9625
17	0.1167	1.2824	40	0.0873	0.9597
52	0.1147	1.2600	15	0.0871	0.9569
89	0.1131	1.2431	61	0.0868	0.9541
87	0.1129	1.2403	50	0.0863	0.9485
75	0.1124	1.2347	85	0.0840	0.9232
14	0.1124	1.2347	69	0.0838	0.9204
43	0.1118	1.2291	54	0.0835	0.9176
11	0.1106	1.2151	83	0.0835	0.9176
62	0.1093	1.2010	63	0.0832	0.9148
60	0.1093	1.2010	39	0.0830	0.9120
55	0.1060	1.1646	38	0.0827	0.9092
64	0.1057	1.1618			
57	0.1047	1.1505	1	0.0779	0.8559
24	0.1044	1.1477	37	0.0779	0.8559
36	0.1044	1.1477	34	0.0779	0.8559
13	0.1039	1.1421	28	0.0779	0.8559
16	0.1037	1.1393	90	0.0779	0.8559
29	0.1034	1.1365	47	0.0779	0.8559
32	0.1034	1.1365	72	0.0779	0.8559
31	0.1032	1.1337	66	0.0761	0.8362
23	0.1016	1.1169	49	0.0761	0.8362
73	0.1004	1.1028	7	0.0751	0.8250
71	0.0998	1.0972	5	0.0751	0.8250
25	0.0991	1.0888	77	0.0700	0.7689
68	0.0986	1.0832	84	0.0695	0.7633
56	0.0983	1.0804	6	0.0626	0.6875
82	0.0981	1.0776			
20	0.0975	1.0720	65	0.0613	0.6535
3	0.0968	1.0635	48	0.0610	0.6507
4	0.0968	1.0635			
			Mean	0.0983	1.0799
			SD	0.0184	0.2031
			Min	0.0610	0.6507
			Max	0.1371	1.5069

Table 5-7: *Alkassah* Quarter, an Attached APARTMENT NEIGHBOURHOOD. Spaces' Ids, their Degree of Integration Values (DI) and Real Degree of Integration Values (RDI)

ID	DI	RDI	ID	DI	RDI
28	0.1632	0.9170	4	0.1149	0.6507
5	0.1609	0.9040	12	0.1126	0.6328
25	0.1563	0.8782	1	0.1080	0.6070
27	0.1563	0.8782	10	0.1057	0.5941
			31	0.1057	0.5941
9	0.1379	0.7749	23	0.1034	0.5812
16	0.1264	0.7103	6	0.0966	0.5424
15	0.1264	0.7103	26	0.0966	0.5424
18	0.1264	0.7103	7	0.0920	0.5166
17	0.1264	0.7103	24	0.0874	0.4908
19	0.1241	0.6974	20	0.0828	0.4649
8	0.1241	0.6974	22	0.0805	0.4520
			2	0.0690	0.3874
21	0.1172	0.6587	13	0.0690	0.3874
30	0.1172	0.6587	11	0.0667	0.3745
29	0.1172	0.6587	14	0.0621	0.3487
3	0.1149	0.6507			
			Mean	0.1114	0.6261
			SD	0.0270	0.1519
			Min	0.0621	0.3487
			Max	0.1632	0.9170

Table 5-8: *Alkassa* Quarter, an DETACHED APARTMENT NEIGHBOURHOOD. Spaces' IDs, their Degree of Integration Values (DI) and Real Degree of Integration Values (RDI).

ID	DI	RDI	ID	DI	RDI
12	0.1571	0.7343	4	0.1190	0.5563
18	0.1571	0.7343	6	0.1190	0.5563
11	0.1571	0.7343	14	0.1143	0.5340
2	0.1524	0.7121	20	0.1143	0.5340
3	0.1524	0.7121	13	0.1095	0.5118
10	0.1429	0.6676	1	0.1048	0.4895
22	0.1429	0.6676	21	0.1048	0.4895
			9	0.1048	0.4895
15	0.1333	0.6231	8	0.0905	0.4228
19	0.1333	0.6231	5	0.0905	0.4228
7	0.1286	0.6008	17	0.0762	0.3560
16	0.1286	0.6008			
			Mean	0.1242	0.5806
			SD	0.0233	0.1088
			Min	0.0762	0.3560
			Max	0.1571	0.7343

Table 5-9: *Aladawi* Quarter, an ELEVATOR APARTMENT NEIGHBOURHOOD. Spaces' IDs, their Degree of Integration Values (DI) and Real Degree of Integration Values (RDI).

ID	DI	RDI	ID	DI	RDI
27	0.1182	1.0368	8	0.0865	0.7588
28	0.1182	1.0368	33	0.0860	0.7544
7	0.1162	1.0193	38	0.0855	0.7500
43	0.1152	1.0105	44	0.0849	0.7447
32	0.1136	0.9965	42	0.0844	0.7404
34	0.1121	0.9833	35	0.0834	0.7316
9	0.1105	0.9693	10	0.0834	0.7316
36	0.1100	0.9649	39	0.0829	0.7272
41	0.1095	0.9605	29	0.0824	0.7228
59	0.1075	0.9430	37	0.0819	0.7184
19	0.1065	0.9342	17	0.0814	0.7140
2	0.1039	0.9114	18	0.0814	0.7140
56	0.1024	0.8982	54	0.0803	0.7044
64	0.1008	0.8842	61	0.0793	0.6956
55	0.0993	0.8711	48	0.0788	0.6912
58	0.0988	0.8667	45	0.0783	0.6868
			11	0.0778	0.6825
57	0.0972	0.8526			
12	0.0972	0.8526	53	0.0742	0.6509
1	0.0972	0.8526	3	0.0737	0.6465
21	0.0962	0.8439	47	0.0732	0.6421
15	0.0957	0.8395	62	0.0721	0.6325
6	0.0957	0.8395	49	0.0721	0.6325
22	0.0947	0.8307	5	0.0706	0.6193
52	0.0890	0.7807	60	0.0675	0.5921
20	0.0890	0.7807	14	0.0670	0.5877
26	0.0885	0.7763	23	0.0645	0.5658
25	0.0885	0.7763	46	0.0640	0.5614
16	0.0885	0.7763	51	0.0624	0.5474
50	0.0885	0.7763	63	0.0609	0.5342
4	0.0875	0.7675	24	0.0583	0.5114
30	0.0865	0.7588	40	0.0558	0.4895
31	0.0865	0.7588			
			Mean	0.0887	0.7778
			SD	0.0162	0.1418
			Min	0.0558	0.4895
			Max	0.1182	1.0368

5-9. Discussion

Route space in every neighbourhood represents a set of social rules that are related to the degree of inhabitant-stranger contact. Social rules (meanings) are considered in this section on the global level when calculating the Degree of Integration as shown in Tables 5-6, 7, 8 and 9. Spaces have either a high degree of integration that is close to 0, or a low degree of integration that is close to 1. After the determination of high or low degrees of integration of route spaces within a neighbourhood, spaces with 10, 20,..., and 50 percent values of DI can be highlighted on

maps.

However, since we are concerned with the comparison of four neighbourhoods with different numbers of spaces, the Real Degree of Integration Values are employed, and the combination of all RDI values of all four maps are compared in Table 5-10, to calculate the threshold for three levels of integration, high, moderate, and low.

Table 5-10: Frequencies of RDI values and percentages of these frequencies in different neighbourhoods. T = Traditional neighbourhood, A = Attached, D = Detached, and E = Elevator apartment neighbourhoods.

RDI	FREQUENCY				PCT of RDI				TTL	PCT
	T	A	D	E	T	A	D	E		
1.5	1				0.01				0.01	0.25
1.4	5				0.05				0.05	1.25
1.3	8				0.09				0.09	2.25
1.2	12				0.13				0.13	3.25
1.1	12				0.13				0.13	3.25
1.0	14			5	0.16			0.08	0.29	6.00
0.9	22	2		10	0.27	0.06		0.16	0.48	0.12
0.8	12	2		10	0.11	0.06		0.14	0.31	7.75
0.7	2	5	5	23	0.02	0.16	0.23	0.34	0.75	18.75
0.6	2	9	6	10	0.02	0.29	0.27	0.16	0.15	18.75
0.5		6	5	7		0.19	0.23	0.11	0.55	13.25
0.4		3	5	1		0.10	0.23	0.02	0.35	8.75
0.3		4	1			0.13	0.05		0.18	4.60
TTL	90	31	22	63	1.00	1.00	1.00	1.00	4.00	1.00

The construction of Table 5-10 is done as follow: first, the frequency of spaces at similar RDI levels (1.5, 1.4, ..., and 0.3), the range from the maximum to the minimum RDI indicated in Tables 5-6,7,8, and 9, was recorded for each neighbourhood, T, A, D, and E. Second, percentages for these frequencies were calculated with respect to their RDI levels. It is important to consider the percentage of these frequencies since the number of spaces in the four neighbourhoods differ. Third, totals of all percentages in each RDI level, for all neighbourhoods, were calculated, and the percentages of these totals are obtained by dividing each one (0.01, 0.05, ..., 0.18) by the total number of neighbourhoods, 4. Finally, threshold values for high, moderate, and low-integrated spaces were estimated by determining the RDI values that

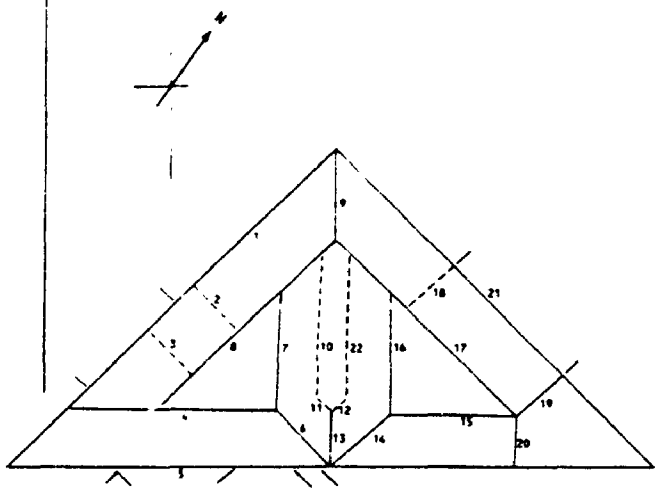
range within the percentages of 0 to 33, 34 to 66, and 67 to 100, as follows:

from	1.50 to 0.86	represent	low-integrated spaces
from	0.85 to 0.66	represent	moderate-integrated spaces
from	0.65 to 0.34	represent	high-integrated spaces

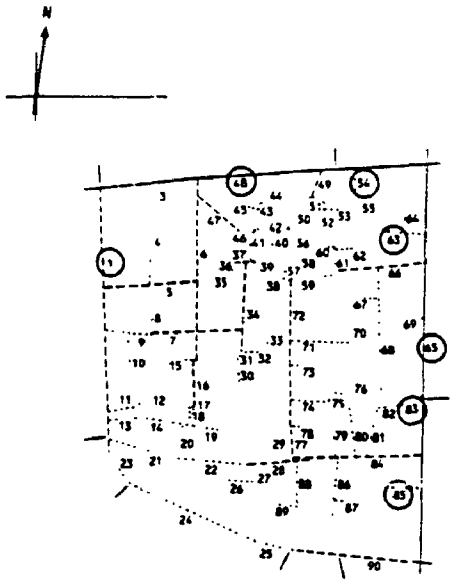
Based on these close values, Figures 5-12T,A,D,E are drawn.

Figure 5-12T shows that there are only two high-integrated spaces, 48 and 65, representing 2 percent of all the spaces in the traditional neighbourhood. They are along the three relatively long routes on the northern and eastern periphery of the neighbourhood. On the other hand, the moderate-integrated spaces are relatively medium-length routes and form 17 percent of all the spaces. They are designated as intermediate zones between the high-integrated route spaces and the low-integrated route spaces. With the exception of low-integrated route spaces (54, 63, 83, and 85, as circled on the Figure), they are connected directly to high-integrated route spaces. Both the moderate and the low-integrated route spaces are almost evenly spread throughout the area. The low-integrated spaces are short but represent 84 percent of all the spaces. Route spaces 1 and 90, like spaces 48 and 65 (circled on the Figure), are part of the strip commercial area. They are, therefore, crowded and considered public (a function that is expected to be found in a high-integrated space). These results recall the history of streets 1 and 90. oth used to be secondary streets, but the encroachment of commercial activities on these streets made them publicly ruled spaces. Their expected social meaning has been transformed into high-integrated spaces.

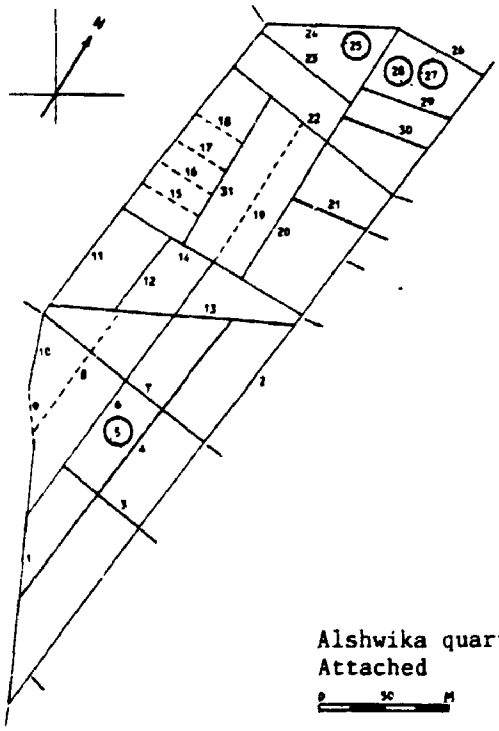
Figure 5-12A shows, contrary to the traditional neighbourhood, that for one Attached neighbourhood, high-integrated spaces dominate the space network. They represent 65 p··cent of all spaces. These routes are long and spread all over the neighbourhood. They form no clear core or cluster, but a grid-like system. The moderate-integrated spaces are distributed like the high-integrated spaces, but form only 25 percent.



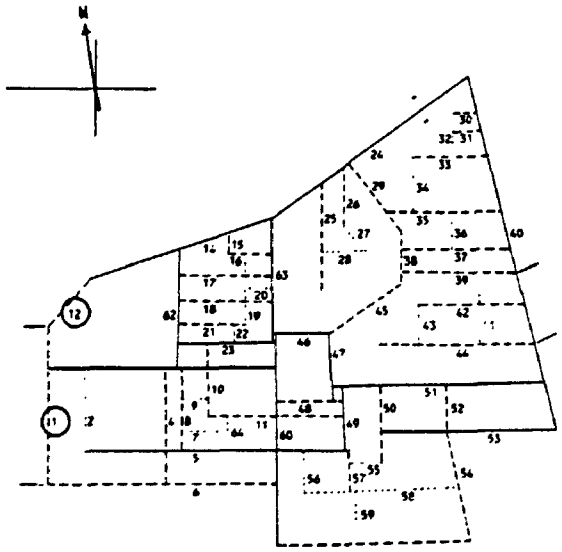
Alkassah quarter,
Detached



Alamin quarter,
Traditional



Alshwika quarter,
Attached



Aladawi quarter,
Elevator

Figures 5-12: Spaces with 3 different levels of integration for T, A, D, and E.

..... Low integration
------ Moderate integration
——— High integration
○ Spaces specifically referred to in the discussion

There is not much to say about the low-integrated spaces, which represent only 13 percent. There are only four such spaces, 5, 25, 27, and 28, and all are short.

Figure 5-12D shows, like the previous figure, the high-integrated spaces for the Detached neighbourhood form 68 percent of all spaces, while the moderate-integrated spaces, which form the core and are spread among the high-integrated spaces, comprising 32 percent. In this case, low-integrated spaces are absent. Both Attached and Detached neighbourhoods have similar DI values, the only difference being that buildings are attached or detached.

Figure 5-12E shows the hierarchical order of spaces for the Elevator neighbourhood being distributed evenly. High-integrated spaces, which represent 14 percent, are relatively long routes, forming the core and penetrating the area, making sub-areas of moderate and low-integrated spaces. The moderate spaces form 48 percent, while the low-integrated spaces form 30 percent.

Curved street spaces were represented by broken lines. Each was dealt with as an independent space. Nonetheless, this causes a problem. For example, part of the curve in the northeast corner of the Aladawi area was found to have higher control values than the other parts of the same curve (see Figure 5-7E, spaces 1, and 12). A similar result was found in Figure 5-7T, route spaces 25 and 90; and Figure 5-7A, route spaces 1,9,10, and 11. This leads to an important question: during a stranger's movement through different parts of the curved street pattern, "do strollers feel the shift from a high-controlled part to a low-controlled part of this curved space?" Also, "do inhabitants who live on different parts of the curved street have different experiences and different social rules in their space?" At a later stage in the research, this question is addressed and is answered indirectly. This remains an interesting and challenging

task for future research.

In Figure 5-7A, space 27 locally has potential to encourage strangers to trespass, as the analysis showed. Its control value (C) is 0.5333, a moderate-controlled space. This moderate-controlled value is a result of its number of connections and the given values (G) of its neighbouring streets, space 26. This makes it different from space 28, which has similar number of connections but its neighbouring space 20 gives it lower C.values. However, on the global level, space 27 is out of reach. Its RDI is 0.8782, a low-integrated space, which means there is little probability of encounter with strangers. This example indicates the controversy between the results of both the global and the local analyses. Many other similar cases are found in the other maps. The construction of a map representing the social meaning (of both controllability and integration) of spaces, therefore, requires further analysis. First of all, let's examine the results statistically.

5-10. Tests for Significance of Differences

The four neighbourhoods have different numbers of spaces, 90, 31, 22, and 63. Due to this, interval data were looked at as ranked data, and the Mann-Whitney Test was applied. The results are indicated in Table 5-11.

Table 5-11: Results of Mann-Whitney Test on C. and RDI Values at a confidence level of 95 and 99 percent respectively. HO = null hypothesis, CV = critical value (CV), U = calculated values. For neighbourhood pairs T,A,D, and E.

Mann-Whitney Test					
Nghd Pairs	CV	C Value		RDI	
		U value	HO	U value	HO
TA	1064.90	1131.50	no	96.00	yes
AD	232.42	227.50	yes	292.00	no
DE	497.66	569.50	no	195.00	yes
TD	722.37	815.50	no	15.00	yes
AE	732.70	751.00	no	466.00	yes
TE	2306.29	2782.00	no	609.00	yes

Then Mann-Whitney Test was carried out on neighbourhoods, two at a time, using both groups of data: C. values and the RDI values. The results are included in Table 5-11. For the local space relationships, measured by the index of control, there are no significant differences in C. values for all paired types of neighbourhoods, except for of A and D, the Attached and the Detached apartment neighbourhoods. For the global space relationships, measured by the degree of integration, the results show the opposite. There are significant differences among RDI values between all paired types of neighbourhoods, except for A and D. On one hand, the results of the global analyses show similarities of the social rules embedded in the Attached and Detached open spaces/street networks. On the other hand, these results show that open spaces of Traditional and Elevator neighbourhoods are governed by social rules in different degrees from each other and from both Attached and Detached neighbourhoods.

5-11. Social Logic of Space

The analysis in this section combines control values and the integration values for each neighbourhood. It is simple and important since it takes into consideration the syntactic relation among spaces on both local and global levels at once. These combinations help to examine locally and globally the spatial arrangement of outdoor units as a result of the application of social rules (privacy, security,...etc.) in each residential type.

The C. values and RDI values (as indicated in Tables 5-1,2,3, and 4, and in Tables 5-6,7,8, and 9) for each neighbourhood are translated into signs, -, +, and 0; Where + indicates high-controlled spaces and low-integrated spaces; and - indicates low-controlled spaces and high-integrated spaces. Spaces with moderate-control or moderate-integration values are indicated by 0.

So each space has two signs, one related to the control value, and

the other to the integration value. The addition of these two signs of space is shown in Table 5-12.

If the two signs for each space are both similar, then the result retains the same sign. If the space has both + and - then the result is interpreted to be equal to 0. If the space has either 0 or -/+, the social logic signs (S.L.) of this space is determined by the width of the space, that is determined by the type of street, whether it is a main (large), a secondary (medium) or a side street (narrow), as indicated in Table 5-13.

Table 5-12: Social logic signs (S.L.) from combined integration and control signs.

Control	Integration		
	High(-)	Moderate(0)	Low (+)
High (+)	0	+/0	+
Moderate (0)	0/-	0	0/+
Low (-)	-	-/0	0

Table 5-13: Social logic signs (S.L.) of spaces with different widths that have one of their integration or control signs 0 and the other - or +.

Street Widths	Control and Integration	
	-/0	+/0
Wide street	-	0
Medium street	0	0
Narrow street	0	+

If the street is wide and its RDI or C. value is - the result is -, and if the street is narrow and its RDI or C. value is + then the result +. If the street is not large (medium or narrow) and its RDI or C.value is -, then the answer is 0. If the street is not narrow (medium or

large), and its RDI or C. value is +, then the answer is also 0.

The consideration of each street, whether it is wide, medium or narrow, is relative to each of the four studied neighbourhoods. This is because the construction of streets took place at different times when the requirements for street width differed. For example, determination of length and width of main streets in the Traditional area was based on space requirements of a loaded horse or camel. When the street was covered (partially or completely), the height of the street cover was sufficient to allow a rider on an animal to pass by. Such transportation is no longer used. Cars have replaced them. New requirements are needed to accommodate both pedestrians and cars. This fact is evident in the width of streets within the four neighbourhoods. Table 5-14 shows the size of every street relative to the type of the built environment.[13]

Table 5-14: Street widths in relation to residential types and uses: main, secondary or side street. Unit of measurement is metre.

Type of space	Main st.	Secondary st.	Side st.
Traditional	15 - 10	9 - 5	4 - 1
Attached	20 - 14	13 - 12	11 - 5
Detached	25 - 16	15 - 12	11 - 10
Elevator	40 - 16	15 - 14	13 - 10

Taking into consideration the above discussion, four tables (5-15, 16, 17, and 18) and four Figures (5-13T, A, D, E) are presented to display local and global values of social logic (S.L.) for each neighbourhood.

[13] Notice, widths of streets indicated in Figure 5-14 were measured by the author and a civil engineer, Redwan Ramadan, a worker for City Hall. The reason for this self-effort is that there are no records in City Hall to indicate street width in relation to neighbourhood types.

Table 5-15: Social logic (S.L.) of spaces for Alamin Quarter (a traditional neighbourhood). Widths of streets are indicated as L (large), M (medium), and N (narrow).

ID		C.value	DI	S.L.	ID		C.value	DI	S.L.
53		+	+	+	4	N	0	+	+
76		+	+	+	9		-	+	0
42		+	+	+	41	M	0	+	0
45		+	+	+	27	N	0	+	+
44		+	+	+	78		+	+	+
12		+	+	+	51	N	0	+	+
58		+	+	+	80		+	+	+
35		+	+	+	46	M	0	+	0
33		+	+	+	88	N	0	+	+
30		+	+	+	79		+	+	+
18	N	0	+	+	86	N	0	+	+
70		+	+	+	81	N	0	+	+
67		+	+	+	74	N	0	+	+
26		+	+	+	21	M	0	+	0
10		+	+	+	8		+	+	+
19	N	0	+	+	22		-	+	0
17	M	0	+	0	59	N	0	+	+
52	N	0	+	+	40		-	+	0
89		+	+	+	15		+	+	+
87		+	+	+	61		-	+	0
75	N	0	+	+	50		-	+	0
14	M	0	+	0	85		+	+	+
43		-	+	0	69		+	+	+
11	N	0	+	+	54	M	0	+	+
62		+	+	+	83	N	0	+	+
60		+	+	+	63	N	0	+	+
55		+	+	+	39	M	0	+	0
64		+	+	+	38		-	+	0
57	N	0	+	+	1	L	-	0	-
24		-	+	0	37	M	-	0	0
36	N	0	+	+	34	M	-	0	0
13	N	0	+	+	28	M	-	0	0
16		-	+	0	90	L	-	0	-
29		+	+	+	47		0	0	0
32	N	0	+	+	72	N	-	0	0
31	N	0	+	+	66		0	0	0
23	M	0	+	0	49		0	0	0
73		+	+	+	7	M	-	0	0
71	N	0	+	+	5		0	0	0
25	M	0	+	0	77	M	-	0	0
68	M	0	+	0	84	M	-	0	0
56		+	+	+	6	M	-	0	0
82	M	0	+	0	65		-	-	-
20	M	0	+	0	48		-	-	-
3	M	0	+	0					

Percentage				Frequency			
+	34	82	34	+	30	73	30
0	43	16	64	0	38	14	57
-	24	2	2	-	21	2	2

Where,

+ Semi-Private,
0 Semi-Public,
- Public

Table 5-16: Social logic (S.L.) of spaces for Alshwika Quarter (an attached neighbourhood). Widths of streets are indicated as L (large), M (medium), and N (narrow).

ID		C.value	DI	S.L.	ID		RA	DI	S.L.
28		+	+	+	12		+	-	0
5		+	+	+	1	L	0	-	-
25		+	+	+	10	L	0	-	-
27	M	0	+	0	31		-	-	-
9	L	+	0	0	23	M	0	-	0
16	N	+	0	+	6		-	-	-
15	N	+	0	+	26	L	0	-	-
18	N	+	0	+	7	M	0	-	0
17	N	+	0	+	24		-	-	-
19	N	+	0	+	20		-	-	-
8		0	0	0	22		-	-	-
21	N	+	-	0	2		-	-	-
30	M	+	-	0	13	L	0	-	-
29	N	+	-	0	11		-	-	-
3		+	-	0	14		-	-	-
4		-	-	-					
Percentage					Frequency				
+		42	13	10	+		13	4	3
0		29	39	61	0		9	12	19
-		29	48	29	-		9	15	9

Table 5-17: Social logic (S.L.) of spaces for Alkassah Quarter (a detached neighbourhood). Widths of streets are indicated as L (large), M (medium), and N (narrow).

ID		C.value	DI	S.L.	ID		RA	DI	S.L.
12		0	0	0	4		-	-	-
18	L	+	0	0	6		-	-	-
11		0	0	0	14		-	-	-
2	M	+	0	0	20	M	0	-	0
3	M	+	0	0	13		-	-	-
10	M	+	0	0	1		-	-	-
22	M	+	0	0	21		-	-	-
15		-	-	-	9	M	0	-	0
19	M	0	-	0	8		-	-	-
7		+	-	0	5		-	-	-
16		+	-	0	17		-	-	-
Percentage					Frequency				
+		27	0	0	+		6	0	0
0		23	32	50	0		5	7	11
-		50	68	50	-		11	15	11

Where:

+ Semi-Private
0 Semi-Public
- Public

Table 5-18: Social logic (S.L.) of spaces for Aladawi Quarter (an elevator neighbourhood). Widths of streets are indicated as L (large), M (medium), and N (narrow).

ID	C.value	DI	S.L.
27 N	0	+	+
28 L	0	+	0
7 N	0	+	+
43	+	+	+
32 N	0	+	+
34	+	+	+
9	+	+	+
36	+	+	+
41 N	0	+	+
59	+	+	+
19	-	+	0
2	+	+	+
56	+	+	+
64 N	0	+	+
55	+	+	+
58	-	+	0
57	0	0	0
12	0	0	0
1 M	-	0	0
21 M	+	0	0
15	0	0	0
6	0	0	0
22 N	+	0	+
52 N	+	0	+
20 N	+	0	+
26 M	+	0	0
25	+	0	0
16	0	0	0
50	0	0	0
4 N	+	0	+
30 N	+	0	+
31 N	+	0	+

ID	RA	DI	S.L.
8	0	0	0
33	0	0	0
38 L	-	0	-
44	0	0	0
42	0	0	0
35 N	-	0	0
10	0	0	0
39 N	+	0	+
29	0	0	0
37	0	0	0
17 N	+	0	+
18 M	+	0	0
54	0	0	0
61	0	0	0
48 M	+	0	0
45	0	0	0
11 N	+	0	+
53 M	0	-	0
3	-	-	-
47	-	-	-
62	-	-	-
49 L	0	-	-
5	-	-	-
60	-	-	-
14	-	-	-
23 M	0	-	0
46	-	-	-
51	-	-	-
63	-	-	-
24	-	-	-
40	-	-	-

Percentage

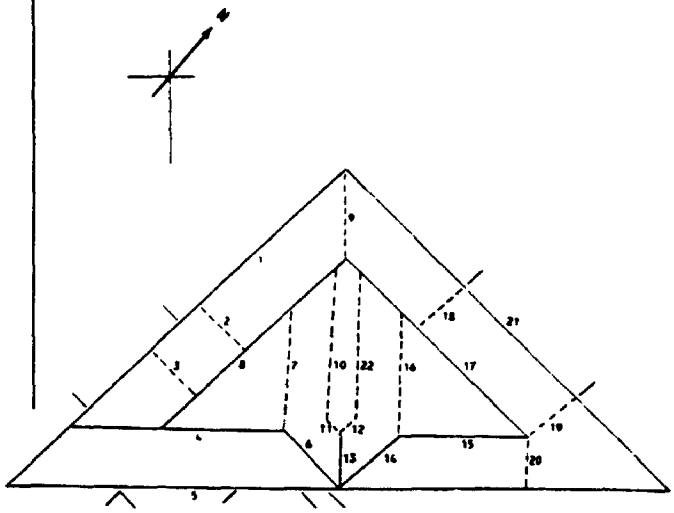
+	35	25	13
0	38	52	70
-	27	22	14

Frequency

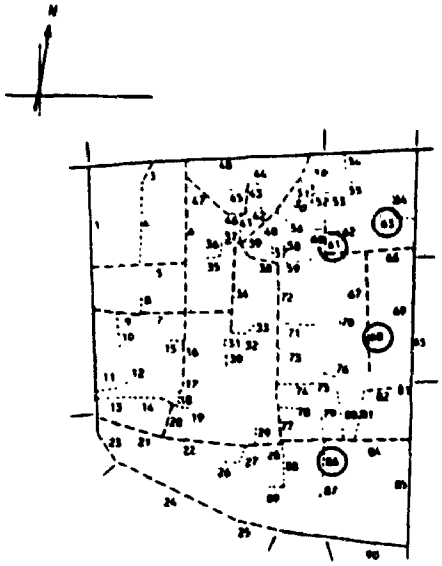
+	22	16	8
0	24	33	44
-	17	14	9

Where:

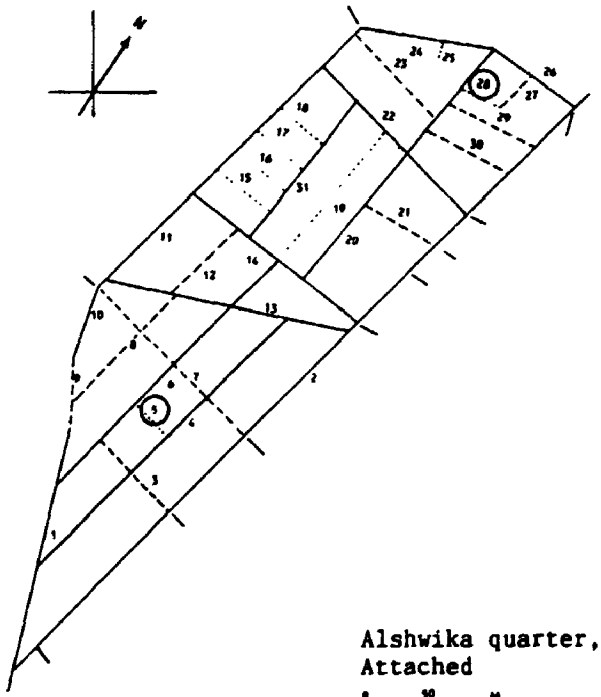
+ Semi-Private
0 Semi-Public
- Public



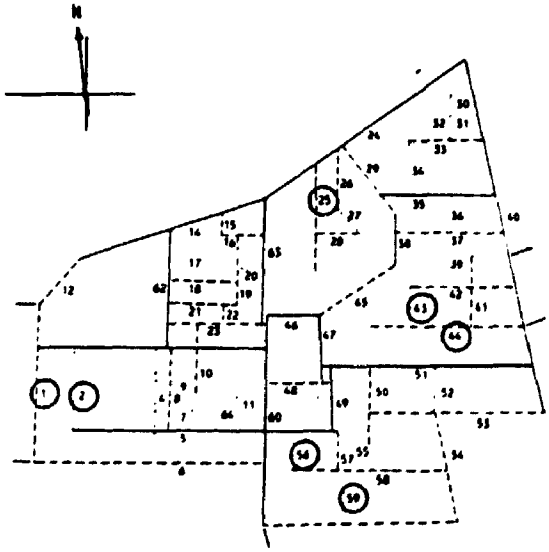
Alkassah quarter,
Detached



Alamin quarter,
Traditional



Alshwika quarter,
Attached



Aladawi quarter,
Elevator

Figures 5-13: Spaces with 3 different levels of social logic (S. L.) for T, A, D, and E.

——— Public
------ Semi-public
..... Semi-private
○ Spaces specifically referred to in the discussion

5-12. Discussion

In this discussion, '-' is called public space, '0' semi-public, and '+' semi-private, taking into consideration that the private space is an incorporated part of the house. While the public street is governed by rules of inhabitants-strangers' encounter, interference, integration, and uncontrolability; the semi-private street is governed by rules of security, privacy, control, non-interference, segregation, and seclusion. The semi-public street is governed by all rules found in the semi-private and public outdoor units, but at intermediate ways. That is a place has fewer strangers than the public street, and is used mostly for transition from semi-private to public spaces. The semi-public street is marked by its moderate width, containment of corner stores, mosques, and churches. Also, in traditional residences, the semi-public street is characterized by coffee houses and public baths. Regarding social interaction, the semi-public street can be defined as the place where strangers wander and inhabitants observe them, unquestioning their presence.

The constructed tables of this section show a similarity between the global and local maps. In both, most of the '+' and '-' spaces remain as they are or, are converted to '0'. The case of spaces that have both '+' and '-' signs is not common, an indication of the absence of a distinct contradictive presentation of both local and global connectivities. Figure 5-13T shows for the Traditional area that only dead-end streets, which form 34 percent, represent semi-private space. This finding is not general because there are examples in Figure 5-13A (spaces 5 and 28) and in Figure 5-13E (spaces 59, 56, 43, and 2) all of which are semi-private but are not dead-end streets. Figure 5-13A is not much different from Figure 5-12A, except for the reduction in frequency of public space from 65 to 42 percent. That reduction is a result of conversion of some public space to semi-public.

Figure 5-13D shows that public spaces in the Detached neighbourhood form the main frame of the space network, since they are located in the peripheral rectangle and in the inner rectangle. The semi-public spaces form the core area, and there is not any semi-private space in street hierarchies. Figure 5-13E has fewer public spaces (14 percent) than Figure 5-7E (only 27 percent) and 5-12E (22 percent), but they still geographically dominate the Elevator neighbourhood, forming the core area and link that stretch between the periphery and the core spaces. The amount of public space is also reduced 35 percent (in the C. value, Figure 5-7E) and 25 percent (in the RDI, Figure 5-12E) to 13 percent. The semi-public spaces form the highest frequency (70 percent).

Finally, in Figures 5-13T, route spaces 68, 86, 61, 63 terminate in the Traditional area with dead-end streets (two similar cases are found in Figures 5-13E, spaces 25 and 44). This fact calls for further analysis to determine if it should be considered as one space or two spaces because, practically, such space may have urban sign features that separate its parts, e.g., the conspicuous street width, the presence of an arch, a *Sabat*, or a gate. This will be considered in Chapter 10, to show how urban features change the impression of space.

5-13. SUMMARY

For examination of four different types of neighbourhoods, syntactic analyses of the relationships of outer-spaces at both the local and global levels help understand the social rules that govern the logic of space connectivities. At the local level it means looking at given space relationships with neighbouring spaces, while the global analysis is concerned with relationships of the space with all other spaces in the neighbourhood. It was demonstrated that, on the local level, among the four neighbourhoods, significant differences were found between Attached and Detached apartment neighbourhoods. On the global level, there are

significant differences among all paired types of the four neighbourhoods with the exception of Attached and Detached apartment neighbourhoods. These results suggest that both attached and detached street patterns are alike, as both have similar space connectivities.

The outdoor units are perceived and cognitively understood by the social rules (publicness, privacy, security,...etc.) governing space accessibility (globally and locally), width, and shape (straight or curved). This produces a coherent spatial and semiotic arrangement. The method followed in analysis of these coherent spatial arrangements was helped by the construction of maps to show locations of public, semi-public and semi-private spaces in every neighbourhood. However, these maps only give a general interpretation of the social logic of the four neighbourhoods. Other factors, as indicated in the following example, could lead to changes in the social logic of space. In Figure 5-4T, space 1 is known as one of the most crowded streets in Damascus because it is part of the downtown area. Its activities attract a considerable number of outsiders. As a result, control over its use by locals is difficult, whereby use of the street for commercial purposes results in intense crowdedness. This causes problems for residents who seek peace and privacy. Thus, if one wants to locate public attractions, such as a coffee house, a water fountain, mosque, clinic, bakery, grocery store, or some other low-intensive activities within a neighbourhood, the location should be considered very carefully. Urban sign elements as determinants of social logic of spaces will be discussed in Chapter 10, "Semantic Analysis".

Certainly, knowing the social logic of the open space network helps to find the most appropriate location for the desired attractions used by inhabitants from different residential areas. This is also useful at the drawing board of the urban designer, before setting the widths of streets to define their social meaning. For example, a street that has a high integration value and a low control value should be designed properly;

that is, be wide enough for public use. Low-integrated and high-controlled streets should be narrowed to save construction and to reduce long-run maintenance costs (see Figure 5-4E space 6).

CHAPTER 6. SYNTACTIC ANALYSIS, INDOOR SPACE

6-1. Introduction

In the previous chapter, syntactic analyses concerned relationships among open spaces (streets and squares) in each of the four selected neighbourhoods: Traditional, Attached, Detached, and Elevator. These relationships were examined in terms of the degree of effective connectedness of a space with regard to every other space in the same neighbourhood. Employing a similar method, this chapter presents a syntactic analysis of different house designs. The connectivity relationships among rooms of different house types for four neighbourhoods is examined. Spatial arrangement of inner spaces (rooms) are: 1) affected by several construction and designs factors that will be discussed in the following section; and 2) governed by various social rules: control, integration, privacy, publicness, non-interference, segregation, and security. These rules were introduced in section 5-1, Chapter 5. An additional rule governing the syntactics of indoor spaces is the "image-of-heaven"[14]. The image-of-heaven has been responsible for the constant adaptation of the inner courtyard in the Traditional building design since the start of Islamic architecture, according to the Islamic calender starting 1413 years ago. The inner courtyard is an open space

---

[14] One of the social rules governing the synthesis of outdoor space is the "Islamization rule". This rule was used during the city's history to create a strong Islamic image of the city. It was applied the first time during the Umaiyad period (661-750 A.C.) when the great mosque was built in the centre to form the core of the city. Later, the mosque had kept its rules as a community centre. Roads led to it as commercial and residential activities spread out around it. As a landmark the minaret, the tower of the mosque, stands up as a distinctive object, adding a semantic expression to the city. The meaning of heaven is conveyed to the observer as their eyes are drawn upward to the top of the minaret where a crescent and star cap it. This stands against sky symbolizing heaven. After the introduction of modern urban designs and architecture, in the early 20th century, mosques are built after construction of residential and commercial areas. So the Islamization rule no longer has a syntactic significance for urban development, though it continues to represent a purely semantic expression. Therefore, Chapter 5, concerned with "syntactic analysis: outdoors", did not discuss the Islamization rule.

The second time the Islamization rule was used was during the Nur al-Din period. The governor, Nur al-Din al-Shahid (1075 A.C.), who was in continuous war against crusaders, was concerned with Islamizing the city. He, therefore, built a minaret on each of the seven gates of the wall city. Nur al-Din's action had a semantic effect and not syntactic.

where Muslims' ideal of heaven is iconically produced by application of natural elements (trees, plants, water fountain, and sky) and decorated walls to the inner courtscape. Centring the Traditional house, the inner courtyard affects the spatial arrangement of other rooms (as will be illustrated later). So, the image-of-heaven is one of the important rules governing the syntactic presentation of inner space connectivities.

These social rules (discussed in section 6-3) are responsible for the creation of the social logic of space connectivities to form three types of inner spaces: guests-inhabitants', inhabitants-inhabitants', and single-inhabitant's spaces. This study compares different house designs. It also tests null hypothesis 2:

> There are no differences in the basic house designs of the four neighbourhood types.

6-2. Introduction to House Designs

House designs range from Traditional ones to those of contemporary styles by builders and professional architects. If the design is developed with respect to time and social rules, as is the case of Traditional houses, it reflects convenient social interaction among guests and family members, and among the family members themselves. Otherwise, as the case of the Modern residences, non-traditional features are introduced. A newly developed design may represent a foreign-design, an individual's creation, or replication of a new social trend that deviates, to some degree, from traditional social life. An effective new design should at least reflect current domestic needs and have some degree of acceptance by society. This chapter examines four different types of house design each of which consists of different design and construction factors over time. All designs are in current use.

In addition to the social rules introduced previously, there are several construction and design factors that affect the spatial

arrangement of inner spaces. These construction and design factors of all types of residential areas, Traditional or Modern, are known to the builder before laying the first building stones. Each design constitutes a set of spatial relationships among the inner spaces of the dwelling. These factors are indicated below in the order of building construction phases. They are discussed according to implication of both Traditional and Modern architecture.[15]

1. Land size and shape
2. Location of rooms
3. Direction of rooms
4. Zoning by-law
5. Construction

6-2-1. Land Shape and Size Factors

Prior to the late nineteenth century, people did not buy land. It was free for those who could afford to build a dwelling (Akbar (1988)[16]. People acquired pieces of land to meet their domestic needs. When the size of the family increases, additional rooms are needed. Expansion of the dwelling was achieved by either vertical extensions or horizontal ones. The shape of traditional houses could be irregular to fit the available land, determined by adjacent buildings.

In Modern parts of the city, parcels of land are priced and subdivided mostly into square pieces. Construction is done under supervision of architects, civil engineers, and is controlled by legislative zoning laws. Future additions or house change are controlled. Many types of change are not allowed. With advanced technology, a

[15] Designs of Modern houses have to be professionally undertaken, and so architects are always required, while the design of Traditional houses was achieved by builders.

[16] Construction of new Traditional houses stopped at the end of 19th century. From then on, only restoration of exiting buildings has occurred, and new Modern structures started to appear. The first modern constructions were public buildings, such as *al-Sarais* Building used now by the Interior Affairs Ministry.

residential area can be built in a short period of time[17]. This virtually eliminates opportunity for residents to evaluate the social effectiveness of the house design.

6-2-2. Location Factors

The location of rooms in a house in relation to each other is governed by functional and social considerations. This is true for Traditional and Modern houses. The Traditional house works on the principle that "the shortest distance between two points is a straight line". Getting into the house with groceries by minimizing distance to the kitchen without going through any other room of the house is preferred.[18] Similarly, locations of the guest room, the living room, and the bedroom have distance and accessibility rationales related to their functional linkage to other activities in the household and their connectivity to private and public areas.

Social expectations of interaction among family members and guests is another factor that determines the location of rooms, close or distant from others. Social expectation is manifested by differentiation of four zones; the guest zone, the service zone (*Saramlic* zone), the living zone, and the sleeping zone[19]. The guest zone and the service zone are customarily located close to each other. This makes serving guests easy. The living zone follows the service zone; whereas, the sleeping zone is

---

[17] The cultural and aesthetic fulfilment of modern architecture that is built quickly is questioned or denied by many architects and urban designers, such as Christopher Alexander. He emphasized in his book, A New Theory of Urban Design, 1987, the need to allow for increments to buildings that serve to heal the weakness of the whole. One of the most important rules for new design, as Alexander proposed, is "Visions" which required that "the increments arise from a vision of what is needed to heal the existing structure, not from an intellectually formed concept" (1987, p.50).

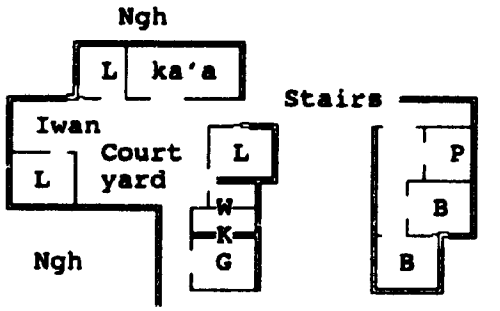
[18] In villa and ranch type houses, exemplified in western type modern houses, it is typical to have the garage area connected to or very close to the kitchen.

[19] The family zone and the private zone are well known as the *Haramlike* zone in the Traditional areas. I do have concern about the use of the term *Haramlike* for two reasons: First, it used to only exist in very rich families' houses. Second, it emphasizes the image that has been pictured by the fiction story, "One Thousand Night and Night". I did come across some publication and movies in America where the authors referred to this fiction story to describe the life of Muslims and Middle Eastern people, and how they deal with women. Scientifically, such reference is unacceptable.

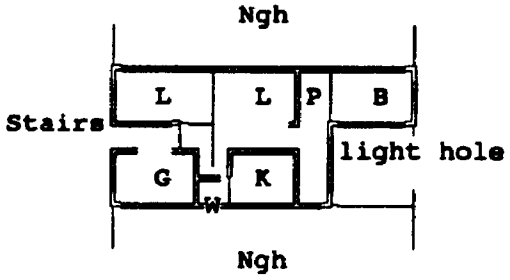
remote from the other zones and the house's main entrance (see Figure 6-1).

The size of these four zones differs according to the wealth of the family. Each zone of the Traditional or Modern house may consist of a number of rooms. The guest zone has one or two rooms[20]. The service zone has a kitchen, a storage area(s), and sometimes a washroom. In Traditional houses the service zone may also have a separate food preparation room. The living zone has a big room for gatherings of family and relatives, and a living room for children.

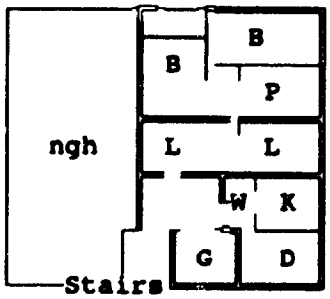
Figure 6-1: Four examples of room layouts in different types of residential areas. Each example displays the four functional zones (bounded by —): guest space (G), service space (K,W,P), living space (L,D), and sleeping space (B) zones. (Ngh) represents attached neighbouring building. (No scale)



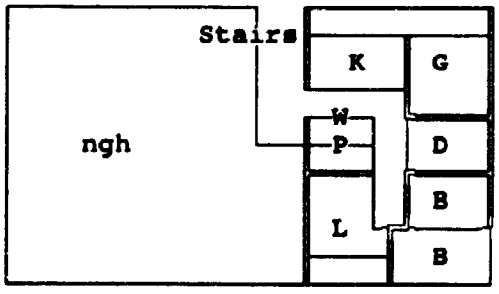
A. A Traditional House.



B. An Attached Building Apt.



C. A Detached Building Apt.

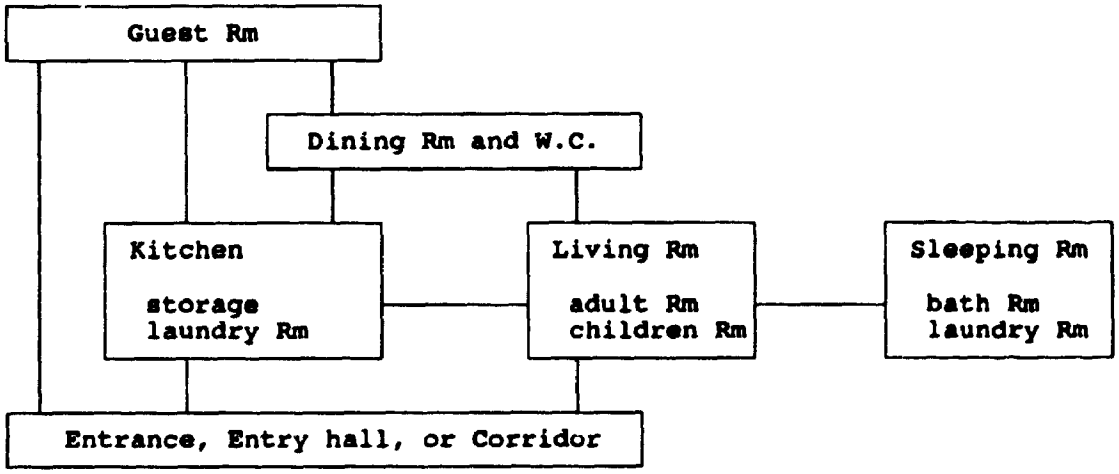


D. An Elevator Building Apt.

[20] In every large house, the guest area may extend to a wing that has places for guests to sleep.

In the Traditional house a courtyard and an *Iwan* are found. Both are used as one open-living area during the summer. An analogue to the inner courtyard and the *Iwan* in modern houses is the balcony space. It is used during the summer, especially during Morning and evening hours. The sleeping zone has bedrooms and bathrooms, and sometimes a laundry room. In Traditional houses, the sleeping zone may contain, beside a number of bedrooms, a bathroom(s), a small section for living, and a small kitchen for light meals and for making coffee. The location relationships among all these rooms of the four zones are summarized in Figure 6-2:

Figure 6-2: Primary locational relationships among house inner spaces.



6-2-3. Directional Factor

Since rooms are connected to the outside by windows, the directional factor is important to consider determining the location of rooms. This factor is demonstrated by the placement and treatment of windows and doors in both Traditional and Modern architecture. However, the solution is totally different in Traditional and Modern designs. Three considerations underline the directional factor. These are socio-religious, exposure to the sun, and the scenery. The socio-religious consideration is related to the direction of *Qubla*[21], or the direction of Mecca that Muslims must face

[21] The direction toward Mecca can be used to explain the organic southern expansion of old Damascus that formed *al-Midan* Quarter (see Ferwati 1988).

while praying[22]. Directional orientation of Traditional houses embodies this consideration, as illustrated in Figure 6-3 by an aerial view of old Damascus. One can notice the southward direction of inner courtyards. As a result, the urban fabric follows a system of directional unity. Modern style houses and apartments tend to ignore this socio-religious factor with windows and doors oriented toward the street, and they commonly do not have an interior courtyard.[23]

The sun represents a second underlying directional factor. Once one decides to build or move to a house, the site is examined to determine the possibilities of orienting rooms according to their importance to the appropriate desired direction: North, West, South, and East. Commonly, it is desired to have bedrooms facing east to help one to awaken quickly. Living areas are preferred to face south, southeast, or southwest to make use of daylight. Southern exposure is regarded as a great advantage since there is benefit of sunlight throughout seasonal shifts. During winter, the low angle of the sun with the earth's surface enables its warmth and light to penetrate deeply inside southern facing rooms. During the summer the sun's northward progression forms a higher angle to the earth's surface. Undesired acutely bright, hot sun shallowly penetrates southern rooms.

The location of the service battery (kitchen, bathroom, and washroom) is preferred on the north side of the house where there is no necessity for sunlight. Also, the service battery may create an undesired smell. The dominating southwestern wind draft carries away undesired smells out of the house.

---

[22] The *Qubla* has a double meaning: 1) for Muslims it is a respectful direction toward Mecca, and 2) it is the south direction. As a respectful direction, people prefer to locate washrooms in another direction so they will not face Mecca while using the W.C.

[23] Because of the coincidence of having the direction of Mecca similar to the direction of the south, the expression "I have a *Qubly* house" is always used to describe the advantage of having a sunny property.

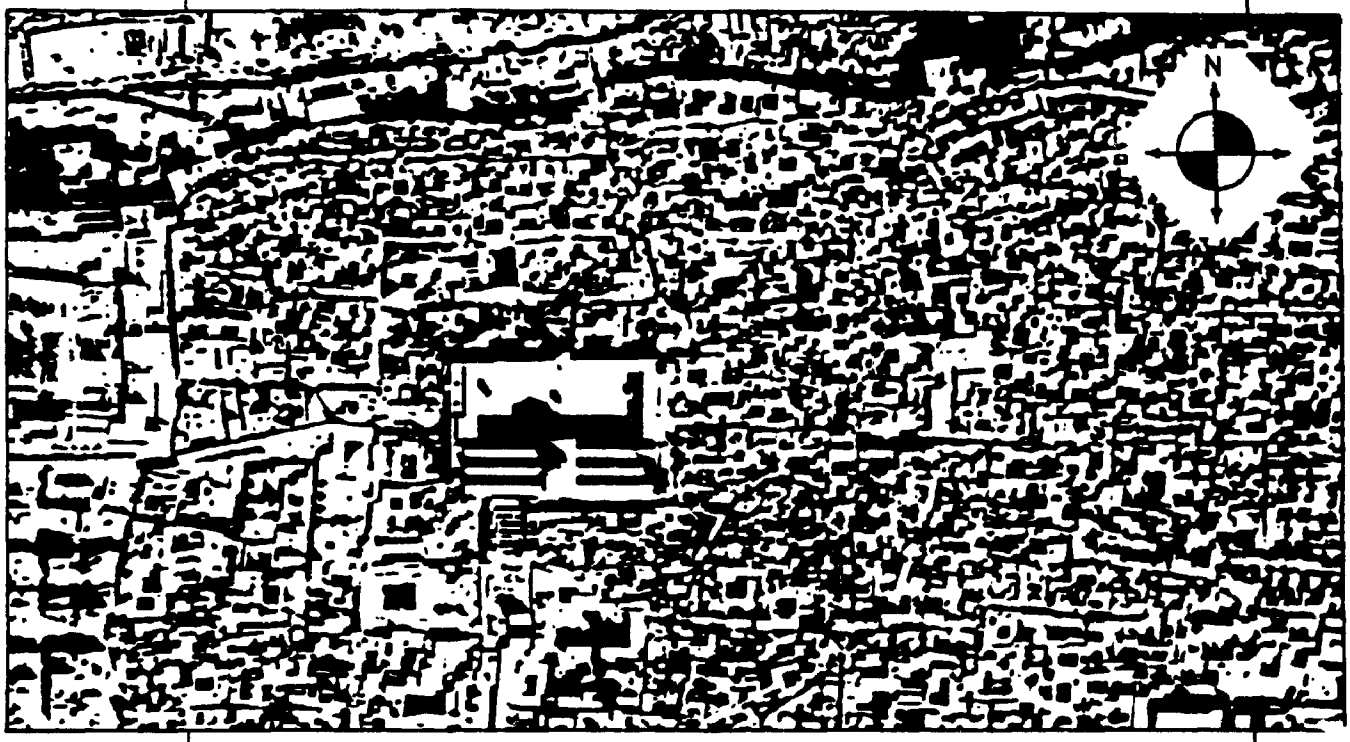


Figure 6-3: Aerial view of the old city. The black areas illustrate locations of inner courtyards of Traditional houses that parallel the inner courtyard of the Umaiyad Great Mosques that follows the *Qubla*, the direction toward Mecca. Source: Ecochard, 1981, p.96.

Scenery represents another directional incentive. This is a more critical factor in Modern houses since the outward openings are reversed from the inward openings onto inner courtyards in Traditional houses. Panoramic views formed by the natural or artificial landscapes (topography, trees, plantations, and water features) and man-made environment (buildings, waste, pollution, and noise) become the usual focus. People may prefer one kind of feature to another. With free choices of building form, height, and openings, people end up with conflicting problems to resolve. The examination of these problems, and solutions for them is discussed in the following section, "Zoning By-law Factors".

6-2-4. Zoning By-law Factors

For Traditional architecture, the principles of zoning by-laws regulates height of structures, setback from the street, window and door opening, etc.) as defined by *the al-Mohtassib (i.e., 17th and 18th centuries)*, whose position is similar to that of the mayor in the modern time. Chapter 2, pages 40-41, elaborated on the organic urban form of the Traditional city that resulted from traditional building principles. Regarding houses, *al-Mohtassib's* role, simply, was not to set zoning by-laws, but to make sure that everyone was happy, and lived in a safe, peaceful environment without conflicts between property owners. He oversaw disputes among neighbours related to such matters as the location of house entrance, the height of the joint wall between two neighbouring buildings, and structural durability to ensure safety for the inhabitants.

In Modern architecture, the surroundings of the property are major constraints that affect selected locations of rooms. A residence may be deprived from its privacy, scenery, peacefulness, and sunlight by the presence of adjacent houses. Negative effects on sites and structures is reduced by zoning by-laws.[24] Zoning by-laws determine where to build and the type of housing (height, setback from the adjacent buildings and streets, etc.). The details of the zoning by-laws may change over time and for particular residential types. Zoning by-laws are continually challenged to accommodate social harmony, environmental harmony, and convenience.

Reflection of zoning by-laws on overall house characteristics and surroundings can be illustrated through three examples: First, in 1960, the zoning by-law required that if residents of the Detached apartment

[24] Diversity and novelty of the built environment are limited by the imposed zoning by-laws. In 1986, Glen LeRoy, Associate Professor at the University of Kansas and the Urban Design Program, said that the architect's effective creativity in building design range only from 6 to 10 percent. This is because building size and buildable area are set by city official plans and by zoning by-laws. The job of architects, therefore, is confined by buildable area. The task is to build as many rooms as possible to maximize utility for their clients. Creative design and aesthetic values often become secondary.

buildings decide to add a fourth floor, this floor must be built with a setback and roofed by a concrete crossbar. The set back is aimed to prevent blockage of the sun on the first floor of adjacent buildings. This zoning by-law is not applied any more.

Second, in Attached apartment buildings, adjacent balconies in different apartments have to be set back at least a meter from the other to form a distance of two meters. This distance is significant to prevent the possibility of jumping from one balcony to another. This is regarded as essential for privacy and security.

Finally, the newest zoning by-law pertains to adding other floors to existing apartment buildings. The zoning by-law confines the building area to 50 percent of the total floor area, with a 2-meter setback from the street-facing building edges, and 1.5 meters from the building edges that face neighbouring buildings. Roofing must be red-tile in gable form. Permission to build on the roof, on the one hand, is a solution for increasing housing demands, but on the other hand, it ensures that no additional apartments can be built in the future.

6-2-5. Construction Factors

Construction factors are related to battery service features, construction materials, and alignment.

A. Battery Service Consideration: Battery service is the service area that contains the kitchen, washroom, bathroom, and laundry room. While it is important to have these facilities aesthetically designed and durable at minimum cost, plumbing and sewage infrastructure are required. Locating the bathroom, washroom and kitchen close to each other reduces plumbing, sewage construction, and maintenance cost.[25]

[25] It is noticeable that windows of battery service rooms are small; when located on the exterior facade of the building, these windows signify their interior location.

B. Construction Materials: Construction materials in Traditional and Modern buildings are different, which affects the characteristics of buildings. In Traditional houses the construction materials are adobe, stone, and wood. Recently, concrete has been introduced for renovations. In Modern apartment buildings, construction materials are concrete, reinforced concrete, steel, cement plaster, and stone. Stone is used mainly to veneer fences and first-floor exterior walls.

Construction specifications based on traditional materials requires use of arches, domes and *moqurnes* to support large openings, such as big rooms, windows, and entrances. Also, Traditional housing requires use of stones in foundation construction and first floors to form strong support walls to sustain the weight of upper floors. Use of wood and adobe in upper floors reduces weight on the structure. Weight-bearing structures made from various material facilitates making variations in building facades. In contrast, use of concrete materials tends to provide uniformity in designs and surfaces by: (1) creating simple facades from uniform building materials throughout the structure, and (2) creating "transparency", an expression for connecting the inside space with outside by use of large glazed openings. The use of domes, arches, and *moqurnes* in construction based or modern materials is substantially reduced. They are likely to be incorporated in Modern designs only as symbolic and aesthetic elements.

C. Alignment: Alignment in architecture is the arrangement of walls and sustainable columns on axes of an imaginary three dimensional grid in a structure. This helps to create orderly and efficient construction. Aesthetic advantages of uniform alignments relate to the location of windows and door openings between columns that appear rhythmical. In Modern buildings, the structure is supported by a skeleton of concrete columns. Walls are not weight-bearing, but function as separators. Commonly, a 360 x 360 cm grid, or some multiplication of 60 cm, is used.

Rooms of the house are commonly allocated within 1, 1.5 or 2 cells of the grid. Finally, columns are aligned (vertically for different floors, and horizontally with different rooms) on the cross or the axes of the grid. In Traditional buildings, walls are built thick enough to support the structure and give considerable room-size flexibility.

The main factors that affect the form of house designs have been summarized. The rest of this chapter addresses the social logic of inner spaces embodied by different house forms.

6-3. Social Analysis of Inner Spaces

> One of the most common assumptions about space, sometimes explicit, more often implicit, is that human spatial organisation is the working out of common behavioral principles through a hierarchy of different levels. Thus from the domestic interior, or even from the individual space, through to the city or region, it is assumed that similar social or psychological forces shape space, differing only in involving larger numbers of people and larger physical aggregates.
>
> (Hillier and Hanson, 1984, pp.143-144)

The door of the house is the entrance to private domestic space. It is the spot where strangers are allowed with legitimate reason. Admission inside is restricted to use of guest rooms that are private household spaces close to the street.

The social rules and psychological forces (integration, separation, control, image of heaven, privacy, and security) govern the spatial arrangement of interior spaces. In reverse, these rules can be syntactically understood by studying the organization of spaces as units that control interaction among family members and provide separation for household members from guests who are permitted inside.

Houses are designed to accommodate private space for family, and semi-private space for general use, which includes a permissible section, providing entrance to all spaces. Interior rooms (living rooms, study rooms, and bedrooms) have different degrees of seclusion and privacy. For

example, entering a bedroom occupied by another family member requires permission to enter, the living room does not. For family members, the living room is considered a semi-private area shared by all members.

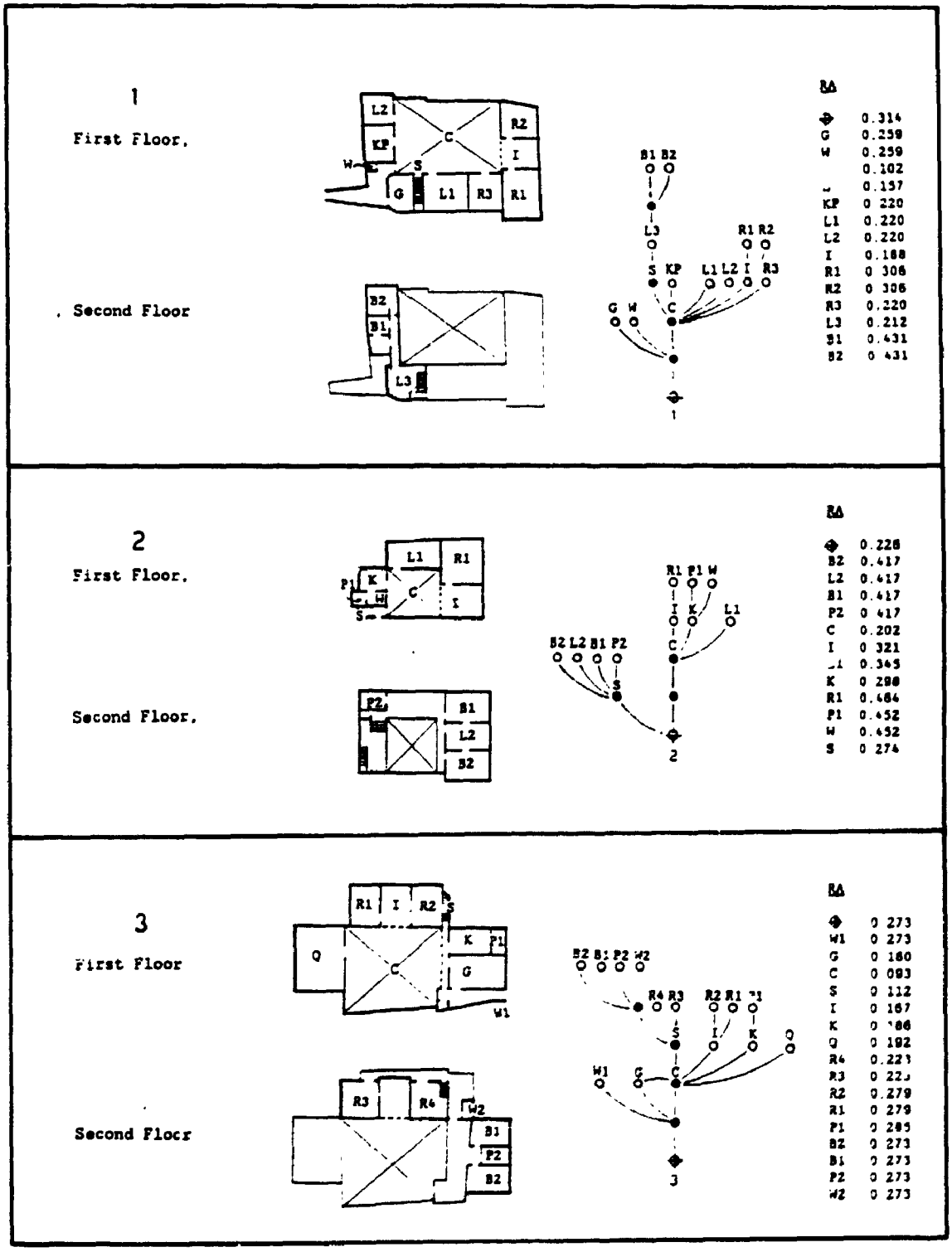
6-3-1. Method and Samples

Analysis of the relationships of rooms to one another as an expression of social interaction uses Hillier and Hanson's methods again. Thus, first, every room is represented as a small open circle, and every corridor/hallway by a solid circle. Second, the entrance (represented by a circle with a cross-bar at its centre) is located at the base of the drawing. Spaces that share the same number of spaces from the entrance are linked by lines to rooms and corridors/hallways that have direct access (connection by door) between each other. Accordingly, an abstract representation of connectivity of the house preserves the locational principle among rooms, but provides a simple bases to compare the social logic of spaces for different houses.

Samples from each of the four studied neighbourhoods are selected and presented in four Plan-Sets, Traditional, Attached, Detached, and Elevator. The connective network space for every house then is drawn. And finally, the degree of integration (DI) for every room with the other rooms of the house are calculated, as explained earlier in Chapter 5. All the plans of the modern apartment buildings presented in Figures 6-5, 6-6, and 6-7 (three plan-sets of A, D, and E) were obtained from City Hall records. The official property reference number is attached to each plan for use in the following discussion. Regarding Traditional houses, there are no available official plans on record. With assistance from students at the University of Damascus Architectural School in summer 1991, plans in Figure 6-4 (a plan set of T) were constructed randomly from house in the inner city.

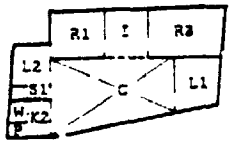
Figure 6-4: Plan set of ten Traditional houses, their inner space connective networks, and integration values (RA).

L = Living room, B = Bedroom, D = Dining room, K = Kitchen,
P = Bathroom, W = Washroom, S = Stairs, I = Iwan,
C = Courtyard, R/o = Room, ◆ = Entrance, • = Corridor/Hallway

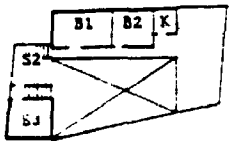


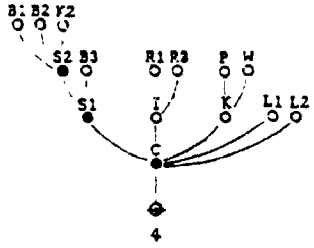
4

First Floor,



Second Floor,



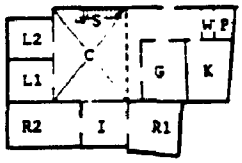


RA

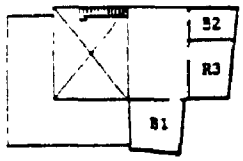
⊕	0.223
C	0.098
S1	0.134
I	0.205
K	0.188
L1	0.223
L2	0.223
S2	0.205
B3	0.259
R1	0.330
R3	0.330
P	0.330
W	0.330
B1	0.330
B2	0.330
K2	0.330

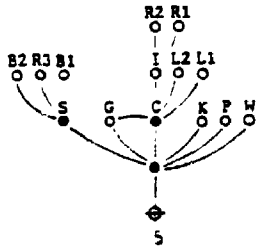
5

First Floor,



Second Floor,



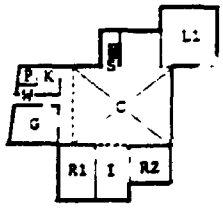


RA

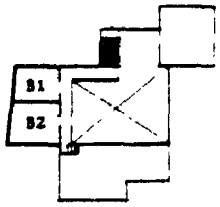
⊕	0.205
S	0.152
G	0.161
C	0.107
K	0.116
P	0.116
W	0.116
B2	0.277
R3	0.277
B1	0.277
I	0.196
L2	0.232
L1	0.232
R2	0.321
R1	0.321

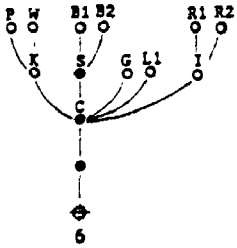
6

First Floor,



Second Floor,



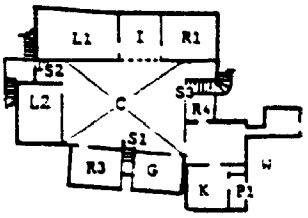


RA

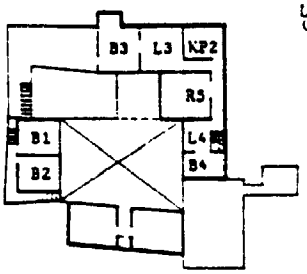
⊕	0.333
C	0.071
K	0.167
S	0.167
G	0.238
L1	0.202
I	0.155
P	0.310
W	0.310
B1	0.310
B2	0.310
R1	0.310
R2	0.310

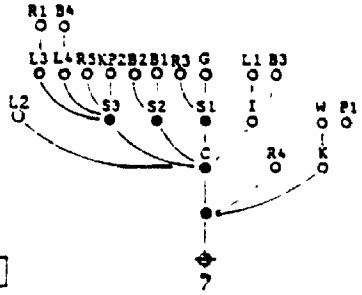
7

First Floor,



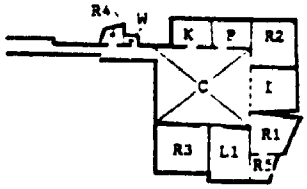
Second Floor,

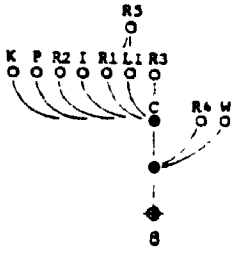




BA	
◆	0 215
C	0.083
R4	0 286
K	0 191
S3	0 120
S2	0.112
S1	0.112
I	0 112
L3	0 199
L4	0 199
R5	0.207
KP2	0.207
B2	0.240
B1	0 240
R3	0 240
G	0 240
L1	0.240
R1	0 240
B3	0 286
B4	0 286
W	0 286
P1	0 286
L2	0.286

8

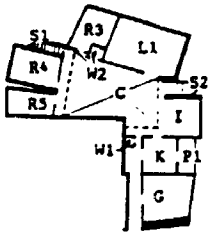




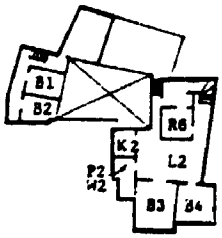
BA	
◆	0 266
C	0 042
R4	0 252
W	0 266
K	0.196
P	0 196
R2	0 196
I	0 196
R1	0 168
L1	0.168
R3	0 196
R5	0 294

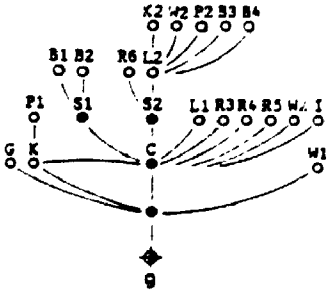
9

First Floor,



Second Floor,

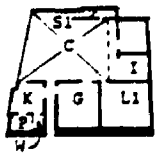




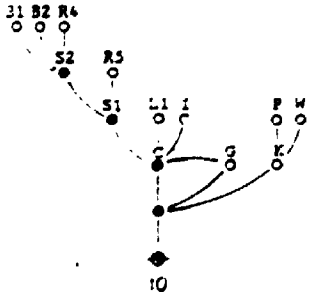
BA	
◆	0 203
G	0 203
K	0 128
C	0 099
W1	0 203
P1	0 211
S1	0 030
S2	0.095
L1	0.048
R3	0.048
R4	0 048
R5	0 048
W2	0 048
I	0.048
B1	0 224
B2	0 224
R6	0.186
L2	0 153
K2	0 240
P2W2	0 240
B3	0 240
B4	0 240

10

First Floor,



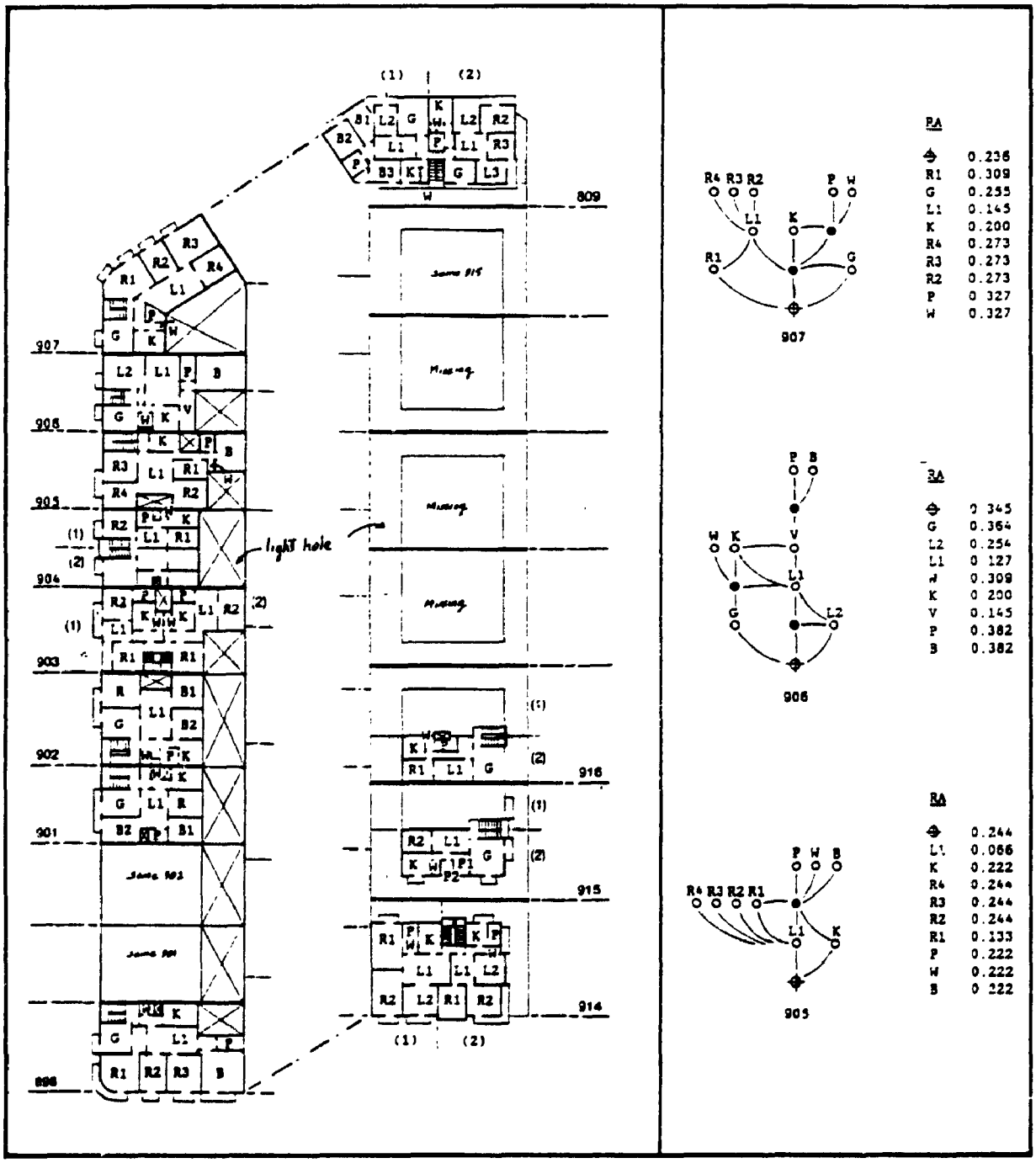
Second Floor,



BA	
◆	0 308
C	0 133
G	0 277
K	0 287
S1	0.174
L1	0 286
I	0 286
P	0 400
W	0 400
S2	0 248
R5	0 308
B1	0 379
B2	0 379
R4	0 379

Figure 6-5: Plan set of sixteen Attached apartments, their inner space connective networks, and integration values (RA).

L = Living room, B = Bedroom, D = Dining room, K = Kitchen,
P = Bathroom, W = Washroom, ⊕ = Entrance, R/○ = Room,
• = Corridor/Hallway



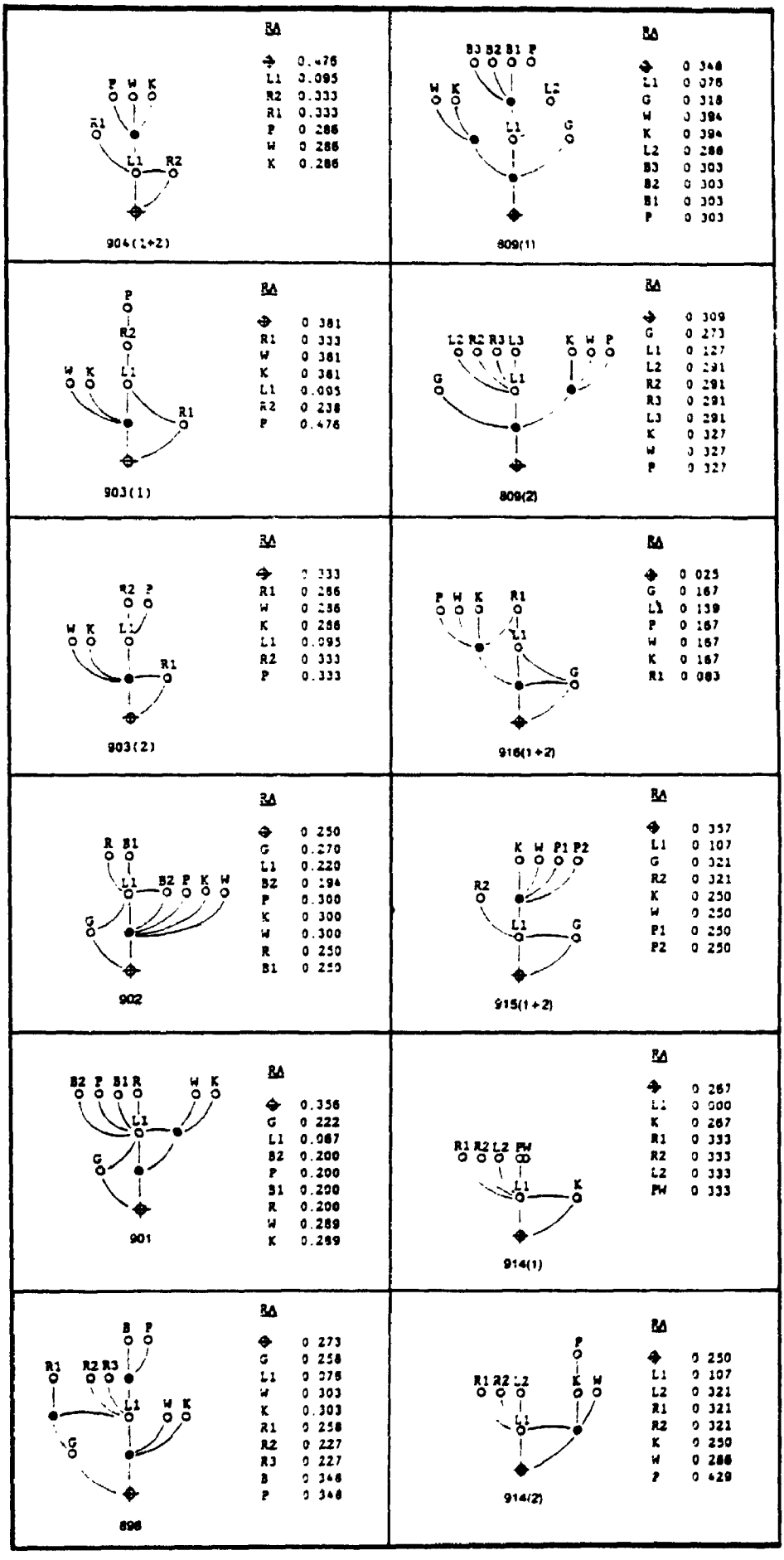

RA
0.476
L1 0.095
R2 0.333
R1 0.333
P 0.286
W 0.286
K 0.286
904(1+2)
RA
0 348
L1 0 076
G 0 318
W 0 394
K 0 394
L2 0 288
B3 0 303
B2 0 303
B1 0 303
P 0 303
909(1)
RA
0 381
R1 0 333
W 0 381
K 0 381
L1 0.095
R2 0 238
P 0.476
903(1)
RA
0 309
G 0 273
L1 0 127
L2 0 291
R2 0 291
R3 0 291
L3 0 291
K 0 327
W 0 327
P 0 327
909(2)
RA
0 333
R1 0 286
W 0 286
K 0 286
L1 0.095
R2 0 333
P 0.333
903(2)
RA
0 025
G 0 167
L1 0 139
P 0 167
W 0 167
K 0 167
R1 0 083
916(1+2)
RA
0 250
G 0.270
L1 0.220
B2 0 194
P 0.300
K 0 300
W 0.300
R 0 250
B1 0 250
902
RA
0 357
L1 0 107
G 0 321
R2 0 321
K 0 250
W 0 250
P1 0 250
P2 0 250
915(1+2)
RA
0.356
G 0 222
L1 0.067
B2 0.200
P 0.200
B1 0.200
R 0.200
W 0.289
K 0.289
901
RA
0 267
L1 0 000
K 0 267
R1 0 333
R2 0 333
L2 0 333
PW 0 333
914(1)
RA
0 273
G 0 258
L1 0 076
W 0 303
K 0.303
R1 0 258
R2 0 227
R3 0 227
B 0 348
P 0 348
898
RA
0 250
L1 0 107
L2 0 321
R1 0 321
R2 0 321
K 0 250
W 0 286
P 0 429
914(2)

Figure 6-6: Plan set of eight Detached apartments, their inner space connective networks, and integration values (RA).

L = Living room, B = Bedroom, D = Dining room, K = Kitchen,
P = Bathroom, W = Washroom, ◆ = Entrance, R/ o = Room,
• = Corridor/Hallway

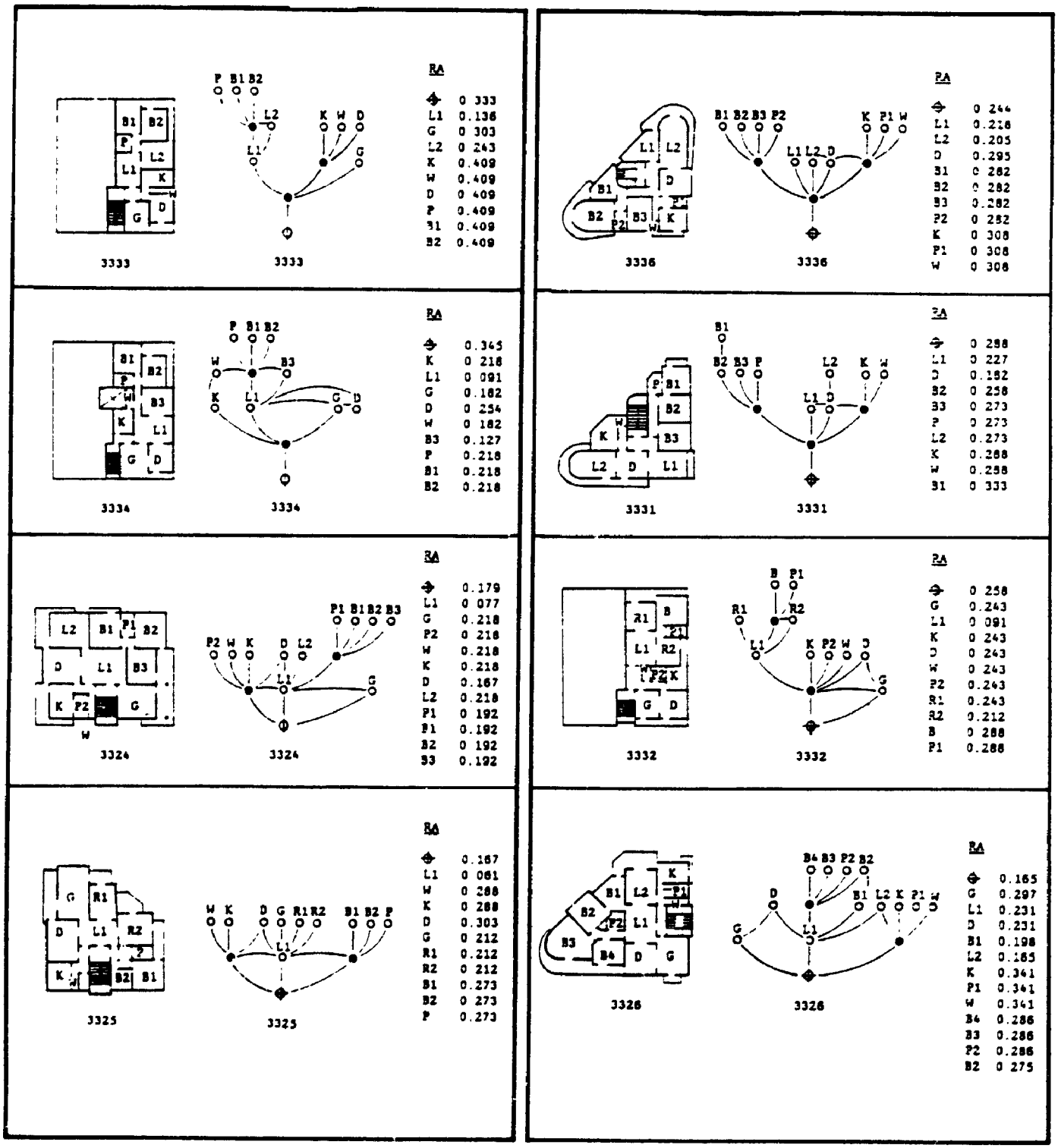
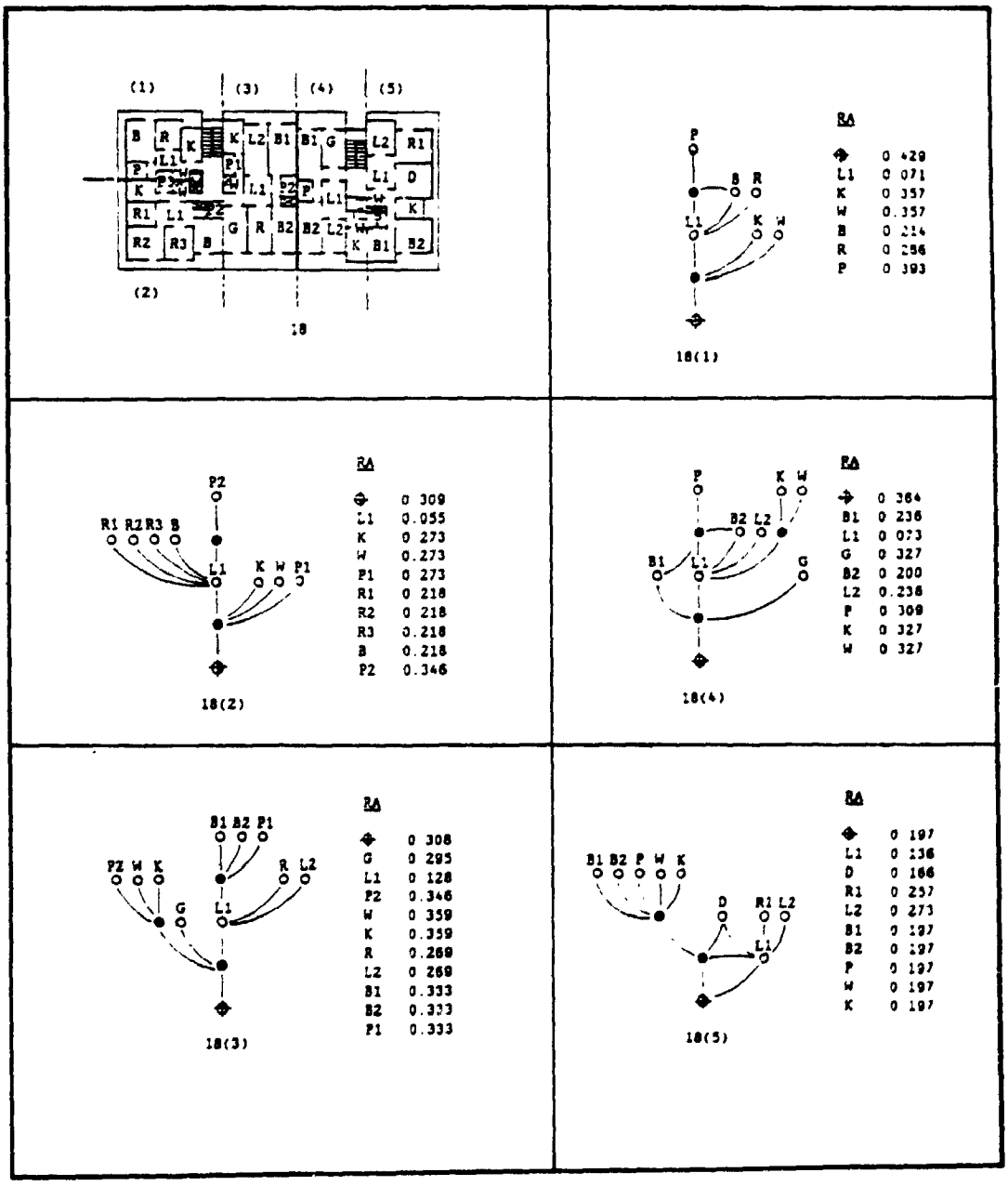
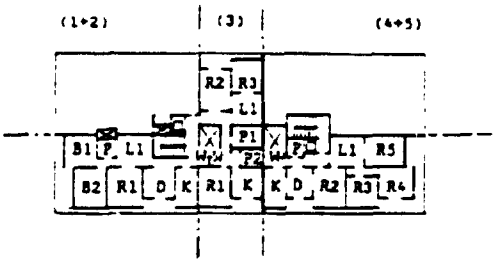


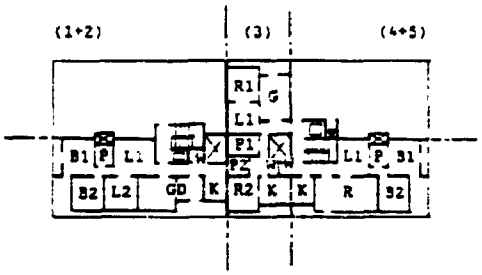
Figure 6-7: Plan set of eleven Elevator apartments (in 3 buildings), their inner space connective networks, and integration values (RA).

L = Living room, B = Bedroom, D = Dining room, K = Kitchen,
P = Bathroom, W = Washroom, ◆ = Entrance, R/o = Room,
• = Corridor/Hallway

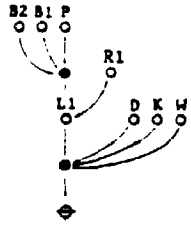




20



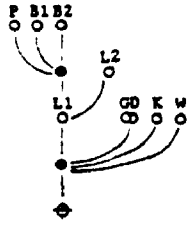
23



20(1+2)

RA

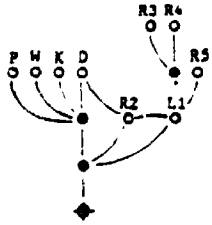
◆	0 378
L1	0 111
D	0.333
K	0.333
W	0.333
R1	0 289
B2	0.333
B1	0 333
P	0.333



23(1+2)

RA

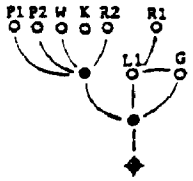
◆	0 379
L1	0.111
GD	0 333
K	0.333
W	0.333
L2	0.333
P	0 333
B1	0.333
B2	0.333



20(4+5)

RA

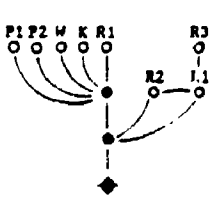
◆	0.318
R2	0 197
L1	0.136
P	0.318
W	0.318
K	0.318
D	0.318
R5	0.224
R3	0.364
R4	0.364



23(3)

RA

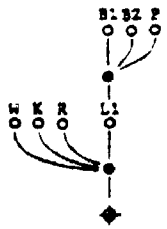
◆	0 333
L1	0.222
G	0.244
P1	0.244
P2	0.244
W	0.244
K	0.244
R2	4 000
R1	



20(3)

RA

◆	0 333
R2	0.244
L1	0.222
P1	0.244
P2	0.244
W	0.244
K	0.244
R1	0 244
R3	0 400



23(4+5)

RA

◆	0.417
W	0.361
K	0.333
R	0.250
L1	0.111
B1	0.333
B2	0.333
P	0.333

6-3-2. Discussion

The analysis of the inner spaces, shown in Figures 6-4, 6-5, 6-6, and 6-7, intends to determine whether these spaces have high or low degrees of accessibility, an indication of governing social rules (privacy, seclusion, aggregation,..., etc.) of spaces. The similarities and differences among the four architectural house types also are sought. Discussion follows for functional uses of the inner spaces (entrance, guest room, service battery, living rooms, and bedrooms), one by one, according to their connections and distances from each other.

The term "steps" will be used in the discussion to mean the number of movements from one space to another. For example, when it is said the kitchen is two steps away from the guest room, that means there are two movement segments: one from the kitchen to the connected corridor and the other from this corridor to the adjacent guest room.

1. Main Entrance and Entry Hall

The main entrance in both Traditional houses and Modern apartments is followed by a small entry hall that leads to the service area, living room, and guest room. The entry hall is transitional from outer to inner parts of the household and is intended to be a place where one can take off coats and shoes. The degree of integration (DI) of the entrance is low, providing an indirect connection between the entrance and the rest of the house. This isolates outside public spaces from the private, secure, and controlled domain of the house. In some Modern houses, there are no entry halls (see Plans 905, 915, 914, and 3326). These most often are found in small-size apartments. If there is no entry hall, L1 (the inner room, or the *Sofa*) accommodates the function of the entry hall, besides being a primary or secondary living room. This dual function of the inner room creates two problems: one related to privacy and the other to removal of street shoes.

2. Guest Room, an Outside Room

In the case of Modern houses, the guest room is mostly in a direct link with the outside (see Plans 907, 902, 901, 3332, 3333, 18(14,3), and 23(3)); or possibly one step deep from the entrance, through the entry hall or the inner room (see Plans 905, 915, 914, 809 (1,2), Plans 3331, 3334, 3326, and Plans 18(1,2,3,4). For the Traditional house, the guest room is found mostly in direct linkage with the entry hall (see plans 1, 3, 5, 6, 9, and 10), or with the inner courtyard, two steps deep from the entrance. The guest room, located by the inner courtyard, is a second guest room, and it is the biggest room, called *ka'a*.[26] In both Traditional and Modern houses, the guest room is found close to the kitchen and has low integration with other spaces of the house, enabling inhabitants to control their private space.

3. Service Battery Area

The service battery area(s) (kitchen, washroom(s), bathroom(s) and laundry room) are wet and smelly. A small hall or a corridor . iffers the service battery area from other rooms. In both Traditional and Modern houses, the washroom and the kitchen generally are only located two steps away from the entrance. This distance puts in easy reach both the kitchen and the washroom to the entrance, guest room, dining room, and living room. In Traditional houses, the kitchen and the washroom may also be found 3 steps from the entrance, accessed from the inner courtyard (see Plan 1, 2, 3). In Modern houses, there are some cases, such as Plan 20 (3, 4+5), where the battery area is three steps from the entrances; however, in these cases the entry hall is connected with them by a corridor. When the door between the hall and the corridor is open, the hall and the corridor integrate into one space, and the battery area becomes two steps

[26] *Ka'a*, usually is a highly decorated room, has two levels: the first is called the *Ataba*, close to the entrance, and the second is the siting area, two steps higher than the *Ataba*. *Ataba* may contain a water fountain. Some people during the interviews referred to the biggest room in their modern houses as *ka'a*.

away from the entrance.

The bathroom(s) generally is located near the bedroom, section where more privacy is sought, and where the degree of integration is low (see as examples, Plans 906, 809 (1) 3336, 3331, 3333, and 23 (1+2, 4+5)). In Traditional houses, bathrooms were not common, as people used public baths. As a result of development of central heating, people now have constructed private baths inside their houses. Bathrooms have taken over part of the kitchen (see Plans 1,2,3,4), storage area (see Plan 7,8), the inner courtyard, a Mashraka, or a corridor (see Plan 2). Thus their locations are not likely to reflect social meaning but simply a functional one.

For Modern houses, bathrooms are grouped with bedrooms around a hall in the deepest part of the house (see plans 18(3), 20(1+2), 23(1+2, 4+5). However, when a big family lives in a small unit, a bedroom may be shared by children. This makes bedrooms not extremely private. The bathrooms are located in the centre of the house, with a hallway connecting the living and sleeping areas. The degrees of integration between bathroom, living room, and bedrooms are high, either by direct connection, or by two steps, (see Plans 901, 903(2), 809(1), 914(1), 3332, 3334, 3324, 18(3), 20(1+2)).

Laundry activities, generally, are not in a specific room. A washing machine is placed either in the bathroom or in the kitchen.

4. Living Area

Living areas have two components, the inner room (L1) and the living rooms (Lx). In the modern houses, L1 is located in the centre of the house, so it is often windowless. It is a central area from which one can move to other rooms in the house. The inner room is one or two steps away from the entrance and other spaces of the house. Therefore, in almost all

our samples of the Modern houses, L1 shows a high degree of integration with the other spaces in the house; see Plans 905, 903(1,2), 914(1), 3332, 3333, 3324, 18(1,2,4), and 23(1+2, 4+5).

The analogue to L1 in Traditional houses is the inner courtyard. It is an open space through which one can move between rooms on the first floor, and to the stairs leading to the second floor. This space is extended to the *Iwan*, the covered part of the inner courtyard usually located on the south side. From either side of the *Iwan*, two rooms can be accessed. As mentioned earlier, both the inner courtyard and the *Iwan* are used in the summer as a living area.

Other living spaces, such as L2, L3, L4, may be found in all types of houses. These living rooms are mostly connected with L1 by big central doors. These doors convert adjacent living rooms into a larger hall that can be used occasionally for various kinds of celebrations. Living rooms are found mostly three or two steps away from the entrance, and only two steps deep from any other room. They are used for TV, a guest area for relatives and close friends, a study area, even a sleeping room (see Plans 908(1,2), 914(1,2), 3336, 3333, 3326, 18(3,4,5), and 23(1+2)).

Some rooms on these plans are marked with the letters "Rx", meaning that these have no fixed use. These rooms may be used either for living activities, for sleeping, or both. Generally, functional uses of rooms not fixed depend on change in family size, and the desire to switch uses among rooms.

5. Dining Rooms

The presented Plan-Sets 6-T and 6-A show no designated room for dining. However, in Chapter 4, the dining room is presented as an incorporated design feature into Traditional and Attached houses. In Chapter 8, people confirmed the existence of dining rooms in their

Traditional and Attached houses as observed signs. In the case of Detached apartment buildings, dining rooms are present in almost every house, while in Elevator apartment buildings dining rooms are found only in large apartments, such as Plans 18(5), 20(1+2,4+5), and 23(1+2). Dining rooms are located two steps away from the kitchen, guest room, and the entrance. There are cases where dining rooms are connected directly with guest rooms by big central doors (see Plans 3336, 3331, 3332, and 23 (1+2)).

Even with the existence of dining rooms in their houses, some people also use living rooms, balconies, court yards, and gardens for eating. Food is prepared in the kitchen and carried on trays to the preferred room for the meal.

6. Bedrooms

Bedrooms are mostly located farthest from the main entrance of the house. In Modern apartments, bedrooms are located three to four steps away from the main entrances (see Plans 906, 905, 809(2), 3336, 3332, and 3333). Bedrooms mostly follow from living spaces, either through direct links, as presented in most Attached apartments (see Plans 902, 901) and some Elevator apartments (see Plan 18(2)). There are none in the case of the Detached apartments. When bedrooms are grouped and accessed by a small hall, a bathroom usually intervenes to form a clearly separated sleeping zone. This is present in one of the Attached apartments (see Plan 809(1)), in all of the Detached apartments (such as 3336, 3331, 3332), and in some of the Elevator apartments (such as Plans 18(15), 20(1+2), and 23(4+5)).

In the Traditional houses, bedrooms are located on the second floor accessed by a corridor (*Dawer*) or terrace (*Mashraka*). Bedrooms are located three steps away (as in Plans 2,4,5,8,9), four steps away (as in Plans 4,6,7,9), five steps away (as in Plans 3,7,9,10), or six steps away

(as in plan 1) from the main entrance. Isolation of bedrooms in Traditional houses is more consistent than that found in Modern apartments.

6-4. SUMMARY

The aim of Chapter 6 was to analyze and compare the spatial arrangement of indoor spaces of the Traditional houses, and the Modern Attached, Detached, and Elevator apartments. Through two sections (6-2 and 6-3), the affect of design factors and the social rules governing the spatial assemblage of indoor units were discussed.

It is argued that the orientation factor (i.e., orientation of residents toward inner courtyard or toward outer open spaces) and the construction factor (i.e., the use of bearing walls and column-weight-bearing construction) produce respectively two different types of house forms: traditional and the modern. These forms are also effected by other factors. These are 1) land shape and size (predivided or not); 2) location factor (location of rooms in relation to their related specialized functions; and 3) zoning by-laws that limit individual freedom to insure safety, health, and aesthetics by limiting property hight, closeness, opening, etc. The study of the syntactics of house forms as a result of these factors shows that the Traditional house represents a different solution for these factors than do three Modern designs that show no significant differences from each other.

The discussion of the effect of social rules on the house form concern with inner space connectivities. It is noted that the study of similarities and differences of the four sampled Plan-Sets takes into consideration houses with different sizes and layouts. It is maintained that this study's samples represents a good mix of different house designs and space connectivities. The results of inner space connectivities for

the four residential house types are summarized in Table 6-1. The locations of rooms that serve specialized functions are spatially organized and connected differently in the Traditional house and the three Modern apartment types. The form of the Traditional house carries four features that are not found in (or not adopted by) any of the three modern apartments: Ka'a, inner courtyard, *Iwan*, and a second floor (that gives bedrooms clearer isolation from the entrance and gives the possibility for a second washroom), and two features shared by all types (or gained from the modern types): bathroom and dining room.

Table 6-1: Types of connection of different types of rooms in four different house forms: Traditional, Attached, Detached, and Elevator.

Room Connectional Character.	Tradition	Attached	Detached	Elevator
Entrance				
hall/corridor	X	X	X	X
direct with living room		X	X	X
Gust room				
outdoors		X	X	X
hall/corridor	X	X	X	X
in living area, *Ka'a*	X			
Kitchen				
two steps from entrance	X	X	X	X
Washroom				
two steps from entrance	X	X	X	X
three steps from entrance	X			
Bathroom				
in kitchen section	X	X	X	X
in bedroom ction	X	X	X	X
living section/courtyard	X	X	X	X
Living room				
inner room		X	X	X
specific room	X	X	X	X
courtyard and *Iwan*	X			
Dining room				
two steps from the entrance		X	X	X
three steps from the entrance	X			
Bedroom				
direct with living room (door)		X		X
indirect with living room(hallway)	X	X	X	X
level separation (stairs)	X			

The three types of modern apartments are not distinguishable by connective space features, except for the direct link between the dining room and the living room, which is not found in Detached apartments. However, all three modern areas shared (or gained from) traditional houses five features: entry hall, corridor, two steps away washroom, access to guest room through the entry hall, and access to bedroom through a hallway.

The results of the analysis indicated in Table 6-1, support the premise that there are differences between house forms in Traditional and Modern neighbourhoods. The existence of few unshared house features between Traditional houses and other Modern apartment types leads to a totally different design from Modern apartments. These differences in house form underlay a different social logic.

The social logic of form is a product of socio-religious Islamic rules, especially in the Traditional house form (Akbar, 1988). These rules represent the socio-religious principles of the occupants of Damascus (Ferwati, 1988). One of the socio-religious principles is based on the man-woman interaction relationship. Anyone who is not a family member or close relative, or considered as an outsider, should not have access to the private family areas (living and sleeping rooms). Therefore, the guest room (*Barani*, or an outside room) is located close to the entrance. Such principles are seriously considered by architects and iconically incorporated in Modern apartments, representing a unifying aspect (though it is not much) between the Traditional and Modern house forms.

The study of what is adopted and gained, indicated in Chapter 4 and in this chapter, shows that, on the one hand, Traditional houses are adaptable to new specialized functions (dining room, bathroom) and newly developed building materials (ceramic, aluminium frames) to be consistent

with cultural changes and advancement of modern technology. However, preserving the originality of Traditional houses must be carefully considered. On the other hand, Modern apartments are basically designed to fulfil inhabitants' social needs of inner spaces, found in Traditional houses (e.g., in the location of guest room, kitchen, and living room).

PART III. PRAGMATIC ANALYSIS

Human-built-environmental interaction starts with the observation of sign objects, buildings, streets, and people. Frequent interaction with objects generates personal appreciation (preference and satisfaction with design features). Appreciation of objects is created by the meanings that people ascribe to objects or behavioural patterns. Meanings of design objects and behavioural patterns are a semantic issue that will be discussed in Part IV. Chapter 8 discusses the observability of the design objects that constitute the four types of residential areas (Traditional, Attached, Detached, and Elevator). Doing so, Chapter 9 will determine inhabitants' preference of and satisfaction with these observed signs. How this Part elicited the required information to determine the observability and appreciation of residential areas will be discussed in Chapter 7.

CHAPTER 7. EMPIRICAL BASES

7-1. Introduction

Semantic and pragmatic analyses invite exploration of inhabitants' preference, level of satisfaction, and interpretation (meaning of signs) in their neighbourhoods. Information about preferences, levels of satisfaction, and meaning of signs are obtained residents' responses to a questionnaire. This chapter discusses the pilot study that contributed to the structured questionnaire, and the social characteristics of the participants.

7-2. Pilot Study

A pilot study was conducted to assist in design of the questionnaire. It was intended to provide some experience eliciting information from residents about their domestic environment and to develop feasible data collection by two procedures: (1) an unstructured interviews of Damascene residents and (2) construction of a structured questionnaire.

Step 1: This initial stage aimed to conduct unstructured interviews and using this information to construct a preliminary structured questionnaire. In mid August, 1990, the author began preliminary work collecting general information about preference, level of satisfaction, and interpretation of design features of the four neighbourhoods, listed in Chapter 4. Being far from Damascus where the survey was to take place, a group of 10 Damascenes living in London, Ontario, were used, as informants and critics. These persons, varied in educational backgrounds, and occupations, represented both sexes and different generations. A

lengthy list of domestic environment features, emotional responses to them and beliefs was compiled. From discussion with these individuals, the questions were designed to elicit feelings, opinions, and beliefs about the features of residents' domestic environment (see Appendix A).

Step two: At this stage, attitudinal responses of Damascene residents were sought since these could furnish a working knowledge of residents' perception. In mid September, 1990, a pilot study in Damascus was carried out over two weeks on inhabitants of traditional neighbourhoods by the author. From this experience, the original questionnaire was modified in three ways: 1) recognition of terminology equivalents. People use several names to refer to the same object (as an example, the guest room may be referred to as Ka'a, barany, salon, or guest room). Therefore, all possible terms for each sign were included in the interview. 2) It was also found that some people were either illiterate or felt nervous responding to the questionnaire. Hence, an oral procedure became inevitable. 3) Many people refused to participate, others made appointments for interviews but never fulfilled them, and still others just refused to answer questions. Some talked about their childhood and past experience in answering every question. In the first week, eight families were interviewed; in the following week, only three families participated. As a result of these encountered difficulties, the survey followed a new strategy. Participants were sought arbitrarily in the selected neighbourhoods.

Since interviews were face-to-face and oral, additional workers were trained. Each interview took up to one and a half hours to conduct, and a similar amount of time was needed to arrange the interview. Also, in a conservative Islamic society, a male stranger entering a house without a female is likely to create problems, so a female assistant was necessary. Because of the difficulty of gaining entrance to households, I had to take advantage of those who agreed to participate and tried to meet with at least three members of their family over the course of the interview.

Those three members were selected by different age, sex, eduction, and occupation. So, with the face-to-face interview, a third assistant was required. Because of the author's difficulties in obtaining reentrance to Syria to continue the interviews, local interviewers were hired to complete the task. They formed two groups. Group one consisted of three men and a woman, working in the city hall. Their work related to the old city. Group two consisted of two supervisors (who were teachers at the Architectural School of Damascus) and six of their students. Their work related to modern residential areas. Appendix B shows the procedures for acquisition of 300 interviews by trained persons to continue the interview after the author returned to Canada. Over the course of 1990, using 14 interviewers, it was possible to interview 344 people for the four neighbourhood types (T, A, D, E) (86 for each type).

7-3. Structure of Questionnaire

Questions were selected and terms carefully chosen to make the questionnaire as short and simple as possible. Appendix C contains the questionnaire. It has three sections: Section One deals with social characteristics of informants, Section Two is pragmatic information, while Section Three is a semantic survey. Chapters 9 and 10 describe the pragmatic and the semantic surveys while the following section discusses social characteristics.

7-4. Social Circumstances

Inhabitants' interaction with the social, symbolic, and physical characteristics of their neighbourhoods are presumed to be influenced by both their social circumstances and spatial behavicurial patterns. Social circumstances (socio-demographic attributes) include age, sex, marital status, family size, education, and occupation of informants and other members of the household. Type of property ownership (rent or own), car

ownership, and size of the house are presumed to be influential factors affecting inhabitants' views of their homes and neighbourhoods. Frequency of interaction with other people (relatives, friends, neighbours, or outsiders) represents the social behaviourial pattern of inhabitants in addition to the frequency of movement, places selected for frequent visits, and mode of transportation or speed of movement (walking or driving). The selected participants in every neighbourhood type (Traditional, Attached, Detached, and Elevator) were selected to represent a variety of social circumstances and behaviourial patterns. Appendix D shows the number of participants by different social circumstances and behaviourial patterns.

7-5. SUMMARY

This chapter introduces the survey techniques used to collect this data for this research. Based on results from a pilot study, the main survey was conducted. The pilot study gave the author a good impression of the type of phenomena he was dealing with. Also, it helped him to evaluate techniques that could be used to execute actual data collection and measurement. Participants in the four neighbourhoods represented a variety of social circumstances taken to be representative of Damascenes' images of different residential types.

CHAPTER 8. OBSERVED SIGNS

8-1. Introduction

This chapter has three main sections. First, the concept of "observed signs" is introduced. Second, the concept is applied to identify the observed signs in the four residential types, the Traditional, Attached, Detached, and Elevator. Finally, comparisons are made of the observed signs among the four residential areas.

The pioneer semiotician, Saussure, divided the sign into signifier and signified (as discussed in Chapter 3). The signifier part is always followed by the signified because it is the carrier of the signified, the message, or information (Morris 1964, Eco 1976). Peirce referred also to the signifier but by a different name, the "index", which presents symbolic and iconic meanings (Broadbent 1973). Later, other names are referred to as the signifier, such as the visual form (Hesselgren 1974), the stimulus, and the referent (Ogden and Richards, 1989). The object, such as a door, is construed as a stimulus that evokes a memory, a feeling, or that prompts an activity (Hesselgren, 1974). It may also evoke a sense of attraction or interest, or of disinterest and repulsion. Simple forms are interpreted as significant objects belonging in a cultural context having a range of possible connotations. Thus, in the context of this study, a door or any other artificial feature has an intersubjectively understood meaning, e.g., fountain as an expected and appreciated object has a range of subjective multiplications: aesthetic place, cool place, play space. However, semioticians ignore the requirement for awareness of the existing object.

The existence of an architectural object varies according to the

residents' experiential perception-cognition. One's perception-cognition and interaction with an urban element (object) is affected by what Lynch (1960) called imageability and legibility of signs. Imageability is the ability of a sign to evoke strong associations and emotion-image in any given observation (Lynch, 1960). Legibility results from the sign's interconnection with other elements in a way that forms a coherent picture. Lynch was a pioneer in paying attention to architectural syntax which affects awareness of urban objects. Lynch indicates that frequency of interaction with a sign certainly affects one's mental image of urban objects. Both terms, imageability and legibility, are referred to in this study as observability of the sign.

This research distinguishes between the actual sign and the observed sign. It defines the former as an object, a signifier, an index, a visual form, or a source that can be seen, and that makes up part of the whole of the built form. The latter is defined as the actual sign that is perceived (or interacted with) by inhabitants[1], and as such, it is mentally visualized. The Umaiyad Mosque is an observed sign that is strongly imageable because of its distinctive large size and its important stature as a symbol of Islam, emphasized by its minarets, crescents, and decoration. Besides, the Umaiyad Mosque is not hidden or in competition with neighbouring features (signs). The observability of Umaiyad Mosque

---

[1] It is important to distinguish between the design feature (actual sign) and the observed sign from, what I call, the hidden geographical sign. The hidden geographical sign refers to the actual sign that has disappeared, but it is still in peoples' mental map. Victor Papenck, professor of architecture at the University of Kansas, illustrate this example by a story. One day on the site of an Indian tribe, in Mexico, Victor asked for directions. One Indian pedestrian said to him: "go east for half a mile until you come across a few trees; then go north. Keep going until you come across three rocks. Your destination will be on the west side of the three rocks". After following the direction, Victor did not find the three rocks. Instead, he found a building; however, he found his destination. When he asked about the three rocks, he was told that "Some centuries back, these used to be three significantly important rocks on the site of the present ten-year-old building".

Hidden geography, usually, is studied by human geographers who seek to learn the history of a landscape. This can be done by studying names of different areas or sites that were used by the inhabitants. In Damascus *Al-Kassion* Mountain is a Syrianic name to describe the barn mountain that surrounds the city of Damascus; second, *Midan* means an open spot or battle ground, and more specifically it refers to an area located to the south of the City Walls. Finally, *Salihia* Quarter that is located on the northwest of Damascus. Originally this name used to refer to the first settlers who come from Nablis, Palestine a few centuries back, described as the righteous people (*Salihin*) (see Altentawi, 1959, and Dhman, 1980). These names do not describe the site any more. The *al-Kassion* Mountain now is inhabited and many trees have been planted on it. *Al-Midan* is inhabited and is no longer an open field. And al-Salihia quarter now has people from different origins. These earlier names reveal the hidden characteristics of this area that can be seen only by those who know their original signs.

is maintained by its strong legibility. The Umaiyad Mosque's parts, such as the bride minaret, al-Nasser Dome, and exterior walls are distinctive, visible and audible throughout many parts of the city-street network. Thus the degree of observability is affected by imageable and legible signs.

For different urban settings represented by the four selected neighbourhoods in Damascus, the question is asked: do different house designs and neighbourhood forms cause any significant differences of observability of house features and neighbourhood elements? The answer takes the form of the hypothesis:

> There is no significant difference in the degree of observability of house features and neighbourhood elements among the four types of residential areas.

8-2. Method and Tables

Measurement of the degree of observability may be done in several ways. For example, Lynch (1960), Stea (1969), and Ladd (1970) used the mapping technique where subjects were asked to sketch maps representing environments; Piaget (1960) and Hart (1974) requested subjects to arrange toys or make models representing environments; Laurendeau and Pinard (1970), Zannaras (1973) asked subjects to identify photographs or models with prescribed verbal protocols. Downs and Stea (1973) selected constructs which reveal environmental information. In this research, a prepared list of actual signs where recited to residents of the neighbourhoods. They were asked to point to those features present in their house features and neighbourhoods. Their responses are presumed to represent the strength of observability of signs. Table 8-1 and 8-2 show the frequency of the observation of each sign for each house feature and urban element by 86 participants for each residential type. The strength or degree of observability of each urban sign ranges from 0 to 86, where 0 indicates an unobserved sign that does not appear in one's mental map; while 86 indicates a highly observed, imaged, and readable sign.

Table 8-1:
Frequency of the observation of house features by 86 respondents in each residential type.

	T	A	D	E
House Topography:				
open plan	12	27	19	8
traditional plan	76	60	74	80
multi level	76			
one level	10	80	80	85
Rooms Form:				
spacious	75	48	51	48
medium	34	27	25	31
small	27	13	25	16
high ceiling	60	34	34	25
medium hight clg	22	35	23	31
low ceilings	17	14	31	30
single height	39	81	84	84
multi height	46			
decorated walls	33	10	15	14
plain walls	70	77	76	75
decorated clg	33	7	14	22
plain ceilings	66	77	76	70
wall closets	60	17	26	32
no-wall closets	53	75	60	52
arched ceilings	40	8	11	20
domed ceilings	16			
square rm	77	77	76	83
unsquare rm	37	34	42	32
decor wall paper	2	9	24	20
Windows Form:				
inner	76			
outer	70	81	85	86
with lattice	25	50	81	76
without lattice	53	33	6	12
arched	38	8		
rectangular	72	80	86	84
big	47	48	56	52
medium	57	46	51	57
small	22	13	19	9
side window			51	35
Convenience:				
airy	70	63	77	68
stale	9	9	5	6
sunlit	77	62	77	79
dark	12	18	12	7
cool in summer	54	38	45	32
hot in summer	31	27	35	50
warm in winter	52	35	54	39
cold in winter	34	37	27	43
Components:				
entry hall	64	47	76	61
guest rm	60	64	75	81
corridor(s)	37	57	77	76
inner rm		71	60	84
kitchen	81	85	86	86
dining rm	22	39	41	45
bedroom	65	84	84	86
living rm	77	80	79	82
main rm (ka'a)	36			
bathroom	76	84	85	84
inner courtyard	72			
fountain	42			
trees / plant	69	57	57	53
garden		10	25	6
iwan	35			
Mashraka	60			
open balcony		63	66	85
semi-glazed blcny		15	8	9
glazed balcony		12	12	30
used roof	83	20	14	
pitched roof	21			
stairs	75			
storage	66	68	65	72
garage, car port				8
joint flat roof		48	60	74
Bldg Material:				
wood	81			
stone	70			
adobe	86			
concrete	12	85	86	86
tile	48	64	66	69
Standard Deviation	23	26	27	28
Cases	62	54	55	55

Table 8-2:
Frequency of the observation of urban elements by 86 respondents in each residential type.

	T	A	D	E
Commercial Area:				
strip	77	72	62	51
plaza	13	44	36	60
grocery store	84	79	80	69
butcher shop	81	79	74	64
bakery	83	73	55	61
fast food rest.	80	75	67	61
coffee house	51	16		
pharmacy	81	81	84	78
barber shop	82	81	76	74
clinic	80	80	76	70
pbc baths	61			
Public Buildings:				
kindergarten	52	72	62	71
elementary school	77	81	73	73
secondary school	74	70	67	76
high school	67	70	85	75
library	36	20	17	23
museum	34			
mosque/church	83	83	83	79
Street Pattern:				
straight	62	83	78	84
windy	78	38	36	38
narrow	74	36	36	34
medium width	74	72	76	75
large	34	48	38	71
dead-end	62	20	12	18
covered	60			
not covered	72	73	79	73
with tree	21	76	74	82
side walk	45	81	63	77
pedestrian rd	50	39	30	32
stony	55			
asphalt	78	83	85	84
Street Characteristics:				
drinking fountain	76	51	34	27
fountain	27	23	15	17
dome	40	32	37	35
minaret	86	71	78	73
arch	55	17	10	13
cultural poster	69	80	78	70
neon signs	53	79	78	79
painted sign	68	72	73	65
gate/door	9	46	62	71
parking lot	36	21	20	61
bus stop	50	54	70	79
park	35	49	43	63
elevator				86
stairs	13	86	86	83
inside fence		7	9	64
Mosque/Church:				
old style	83	40		
new style	14	67	77	85
close by	79	63	61	69
Building Material:				
wood	81	40	42	28
stone / marble	81	50	44	43
adobe	79			
concrete	67	85	86	86
Standard Deviation	22	22	24	20
Cases	51	48	47	47

8-3. Comparative Discussion

Observability of house features and other urban elements represents both imageability-legibility and intensity of the sign. Intensity refers to the number of times a feature is cited by interviewed inhabitants. Observability of sign features is affected by the direct interaction with such sign features. This means that, if a sign is repeated in each part of the neighbourhood, it is more likely to be perceived and recalled by residents than a sign reported only once. Regarding house features, inhabitants have direct interactions with all design features (they have a high degree of observability). Thus, when they were asked to point out their own house features, their response is regarded as a reflection of the intensity of sign features. This explains the absence of some house design features, such as the storage room, the balcony, or the living area, which, though existing, have little intensity ascribed to them. Consequently, the results of people's responses, shown in Table 8-1, represents the intensity of signs more than their degree of observability (imageability-legibility). On the other hand, since inhabitants are likely to have indirect or no contact with some sign elements, mental images of their neighbourhood may show low recollection of some urban elements. If someone has never been to a back alley or visited the pharmacy located only one block away from his/her home, he/she likely will not have any recollection of such urban elements. Thus, values indicated in Table 8-2 fluctuate between the degree of intensity and the observability of neighbourhood elements.

How correlated are the observability of signs indicated in the previous tables for each pair of the four types of neighbourhoods? Tables 8-3 and 8-4 show the Correlation Coefficients for every pair of house types and neighbourhoods. At the 0.1 significance level, there are no significant differences in the degree of observability of house features and neighbourhood elements among occupants of the four residential types.

Table 8-3: Correlation Coefficients of observed house features between pairs of residential types. Corr = significance level

	Cases	Mean	Std Dev	Corr
Traditional House	53	49.67	23.079	0.448 **
Attached Apartment		45.01	26.676	
Traditional House	53	49.67	23.079	0.402 *
Detached Apartment		48.54	28.124	
Traditional House	51	48.66	22.891	0.477 **
High-Rise Building		49.74	28.002	
Attached Apartment	59	44.15	26.647	0.933 **
Detached Apartment		47.47	27.885	
Attached Apartment	57	45.33	26.274	0.924 **
High-Rise Building		49.56	28.714	
Detached Apartment	58	48.91	27.051	0.946 **
High-Rise Building		49.31	28.525	

Table 8-4: Correlation Coefficient of observed urban elements between pairs of residential types. Corr = significance level

	Cases	Mean	Std Dev	Corr
Traditional House	50	60.68	23.097	0.398 *
Attached Apartment		60.60	22.098	
Traditional House	49	60.22	23.108	0.362
Detached Apartment		58.34	24.397	
Traditional House	48	60.41	23.313	0.161
High-Rise Building		60.18	21.892	
Attached Apartment	51	59.61	23.088	0.952 **
Detached Apartment		57.45	24.891	
Attached Apartment	50	60.48	22.458	0.779 **
High-Rise Building		60.48	21.501	
Detached Apartment	50	58.40	24.193	0.845 **
High-Rise Building		60.48	21.501	

2-tailed Significance: * = 0.01, ** = 0.001

In Table 8-3, the standard deviations[2] for Traditional house features are smaller than those for Attached, Detached and Elevator apartment features. This suggests that inhabitants of Traditional houses

[2] Differences in values of standard deviation for the four residential areas may be due to differences in the number of cases. These differences result from the elimination of house features or urban elements that are not common to both of the compared house types or neighbourhoods.

observe the features of their houses more vividly than inhabitants of Modern apartments. In Table 8-4, standard deviations for neighbourhood elements suggest that the degree of observability among all residential areas are relatively close. When there are significant correlations, the plotted results of the paired comparisons should show a positive trend (see Figures 8-1 to 8-12). Similarities in the degree of observability among inhabitants of the three modern types, as indicated by Figures 8-4,5,6 and 8-10,11,12, are even more obvious. Notably, correlation values were not calculated for cases that have 0 values in one of the paired neighbourhoods. Since the study deals with observation of elements where all features affect the degree of legibility of all others, missing cases represent one of the causes of differences (though not significant) among the four neighbourhood types. Missing cases are identified on the graphs for consideration in the following discussion.

House Features

House features are depicted in the first six illustrations (Figures 8-1 to 8-6). Inspection of the graphs shows that the Traditional house has scattered patterns, or weak correlations with any other modern apartment types. Positive correlations among modern residential types is clear. The number of features lying outside a cone of strong resemblance (dashed lines)[3] tend towards either the Traditional or the Attached, Detached, and Elevator areas, an indication of higher observability for such features by residents living in such areas. Tables 8-5 and 8-6 summarize these results, indicating the significantly different features of Traditional and modern areas.

Table 8-5 shows 21 features tending towards the Traditional area. All of these features are common to Traditional houses. Sixteen of these features have lower observation values by residents of the three Modern

[3] David Lowenthal (1972) uses the strong assembly lines in his semantic differential method on Environmental Structures: Semantic and Experiential Components: No. 5.

Figures 8-1 to 8-6: Paired comparsion of the frequency of observation of house features by 86 residents of each house type, T,A,D, and E.

Dashed Lines — form a cone of strong resemblance.

Circle — highlight a cluster of high (correlation) observation of house features

Legend:

m.pln	open plan (modern)
t.pln	traditional plan
mltlvl	multi-level house
s.lvl	one-level house
spcs	spacious rooms
me.rm	medium-size rooms
sml.rm	small rooms
h.clg	high ceilings
me.clg	medium-hight ceilings
lw.clg	low ceilings
sngl.h	single-height ceilings
mlt.h	multi-height ceilings
dcr.wl	decorated walls
p.wl	plain walls
dcr.clg	decorated ceilings
p.clg	plain ceilings
clst	wall closets
n.clst	no-wall closets
rc.clg	arched ceilings
dm.clg	domed ceilings
sqrm	square rooms
n.sqrm	unsquare rooms
wl.pr	decorated wallpapers
inwd	windows open into courtyard
otwd	windows open onto outside
ltc	lattice windows
n.ltc	no lattice windows
rc.w	arched windows
rec.w	rectangular windows
big.w	big windows
me.w	medium windows
sml.w	small windows
sd.w	windows on the setback
airy	airy house
stl	stale
snlt	sunlit
drk	dark
cool	cool in summer
hot	hot in summer
warm	warm in winter
cold	cold in winter
etrc	entrance(s)
gst	guest room
crdr	corridor(s)
inrm	inner room
ktn	kitchen
dng	dining room
bdrm	bedroom(s)
lvg	living room(s)
kaa	main room (*ka'a*)
bth	bathroom
ct.yd	inner courtyard
fntn	fountain
tree	trees and plant
grdn	garden
iwan	*Iwan*
mshk	*Mashraka*
blcy	open balcony
smglz	semi-glazed balcony
glz	glazed balcony
us.rf	used roof
pch.rf	pitched roof
strs	stairs
stg	storage
grg	garage, car port
rf	joint flat roof
wood	wood
stone	stone
adobe	adobe
cnct	concrete
tile	tile

Figure 8-1

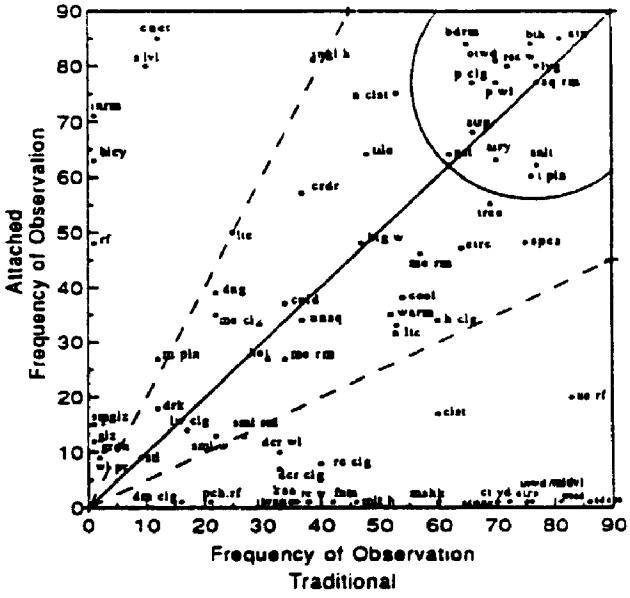


Figure 8-2

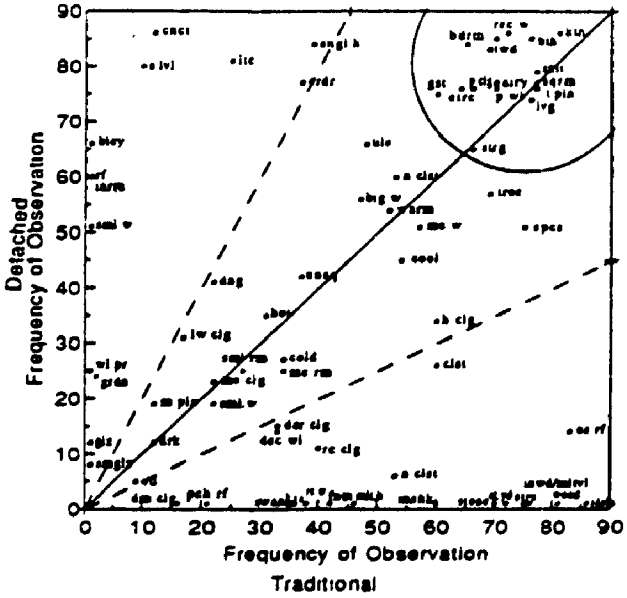


Figure 8-3

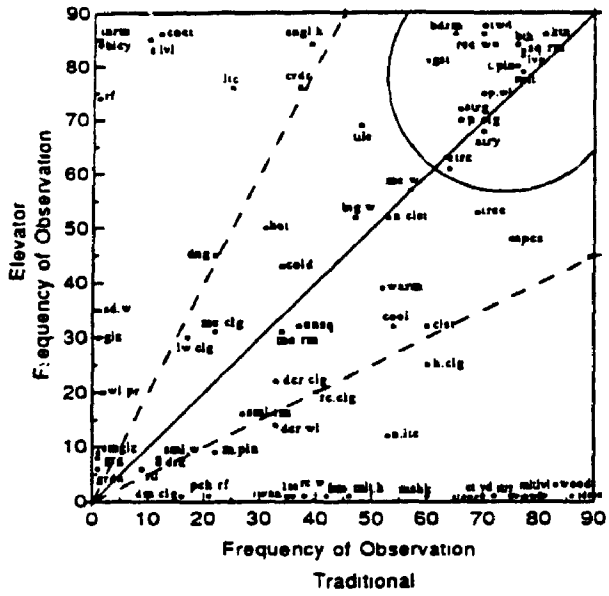


Figure 8-4

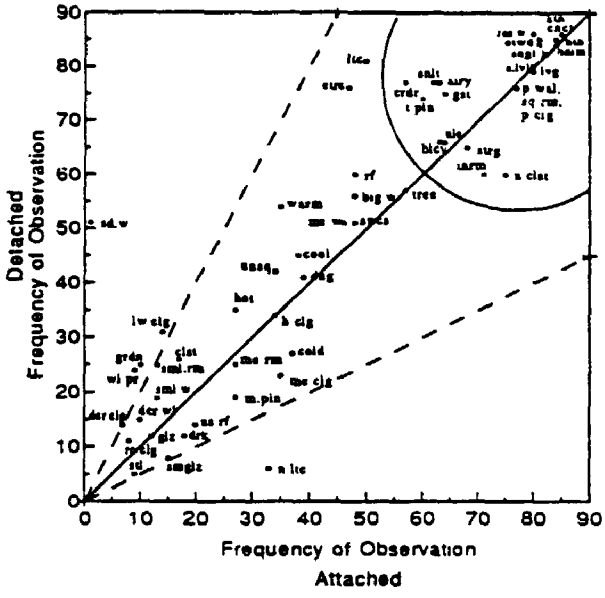


Figure 8-5

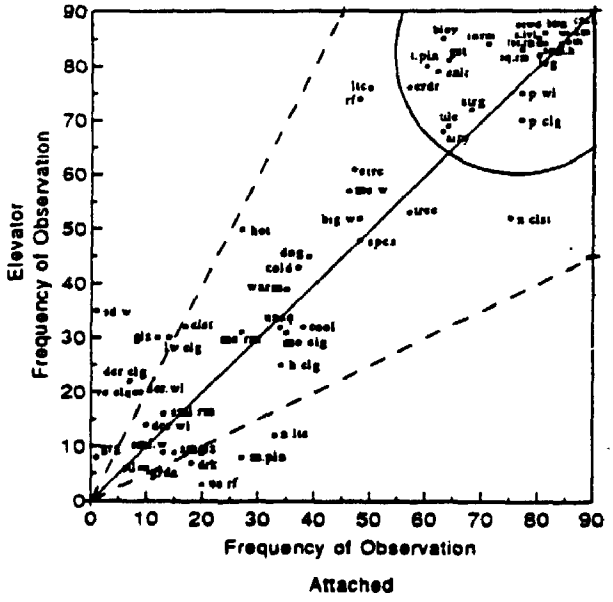
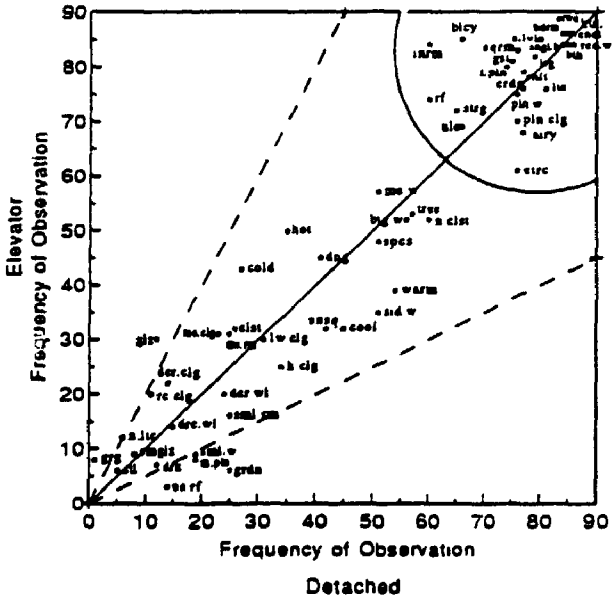


Figure 8-6



Figures 8-7 to 8-12: Paired comparsion of the frequency of observation of urban elements by 86 residents of each neighbourhood type, T,A,D, and E.

Dashed Lines — form a cone of strong resemblance

Circle — highlight a cluster of high (correlation) observation of urban elements

Legend:

s.com	strip commercial
plaza	centralized commercial
str	corner store
gstr	grocery store
btr	butcher shop
bkry	bakery
fstfd	fastfood restaurant
cfhs	coffee house
phcy	pharmacy
brbr	barber shop
clnc	clinic
bth	bath
grn	kindergarten
e.schl	elementary school
s.schl	secondary school
h.schl	high school
lbry	library
msm	museum
strt	straight street
windy	windy street
narrow	narrow street
me.wd	medium width street
large	large street
clsd	dead end street
cvd	partially covered street
n.cvd	not covered street
tree	with tree
sd.wk	street with sidewalk
pdn	pedestrian route
stony	stony streets
asph	asphalt
drkg	drinking fountain
fntn	fountain
gate	gate/door
dome	dome
mnrt	minaret
arch	arch
pstr	cultural poster
neon	neon sign
pntd	painted sign
pklt	parking lot
stp	bus stop
prk	park
elv	elevator
str	stairs
fence	inside fence
t.msq	old style mosque
m.msq	new style mosque
by.msq	close by mosque
wood	wood
stone	stone / marbel
adobe	adobe
cnct	concrete

Figure 8-7

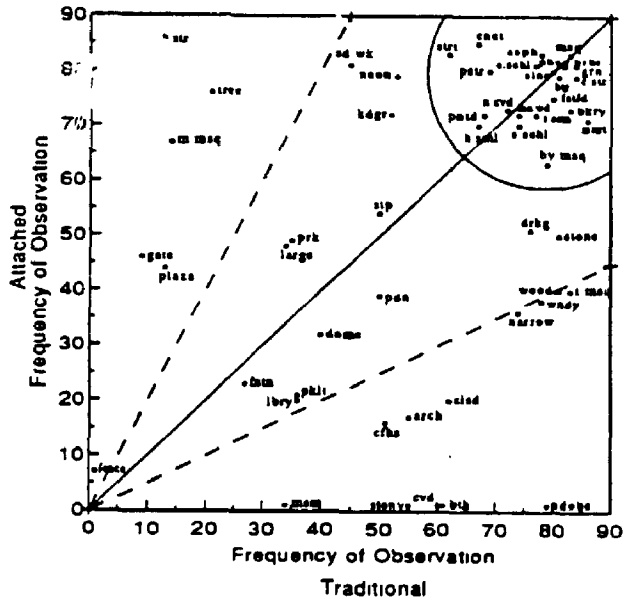


Figure 8-8

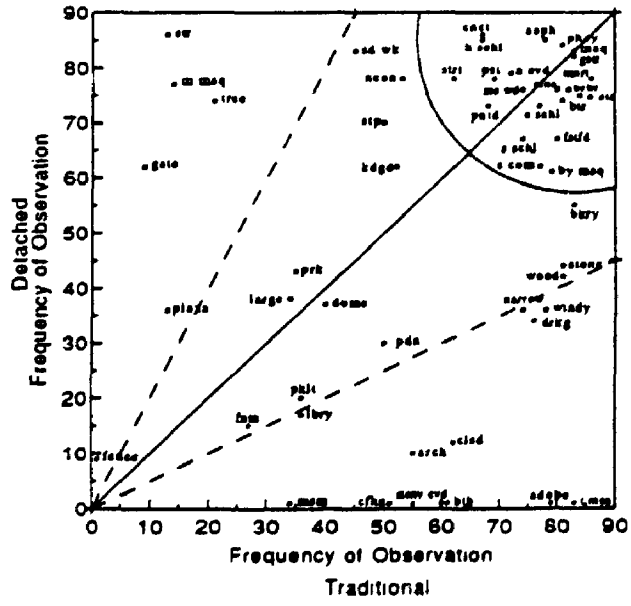


Figure 8-9

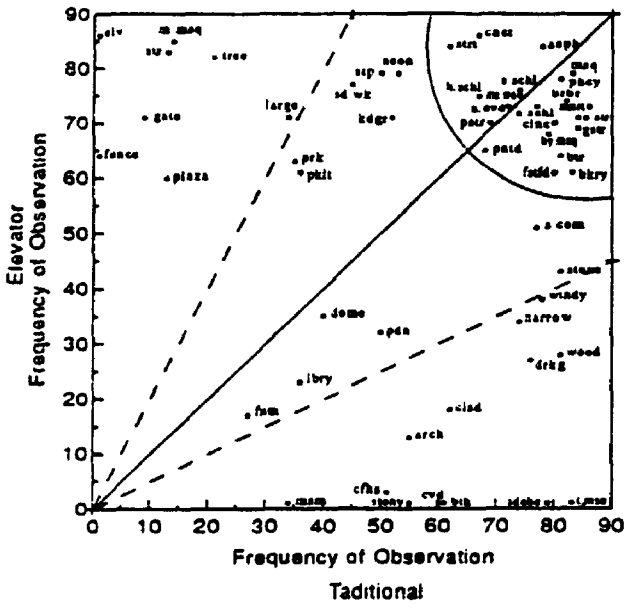


Figure 8-10

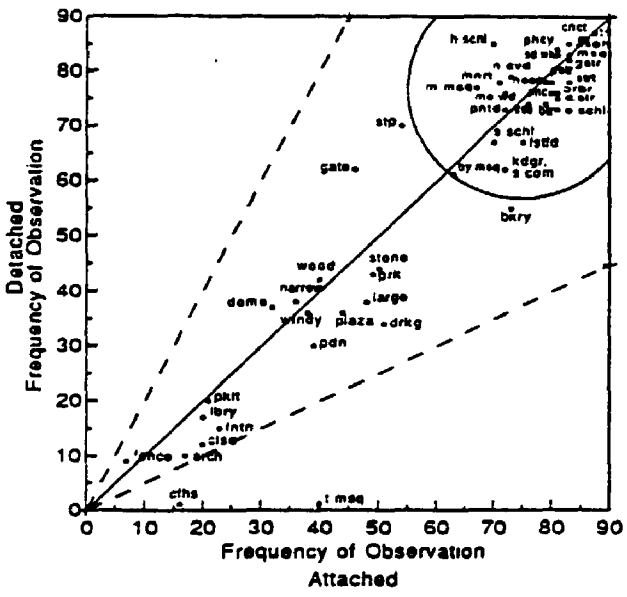


Figure 8-11

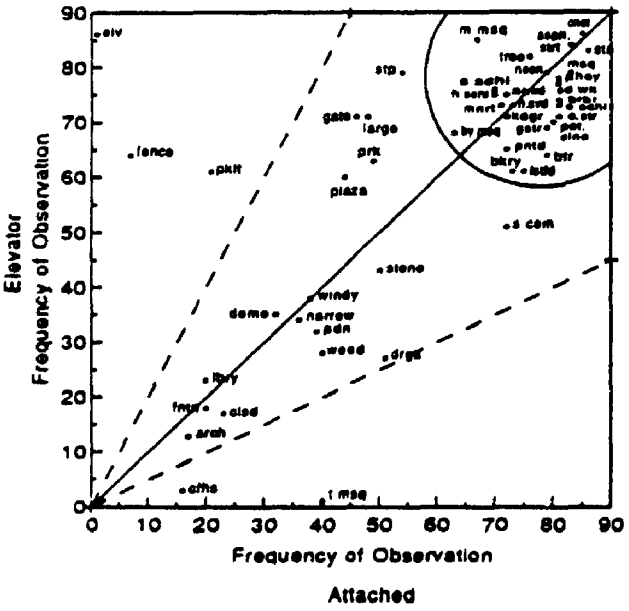
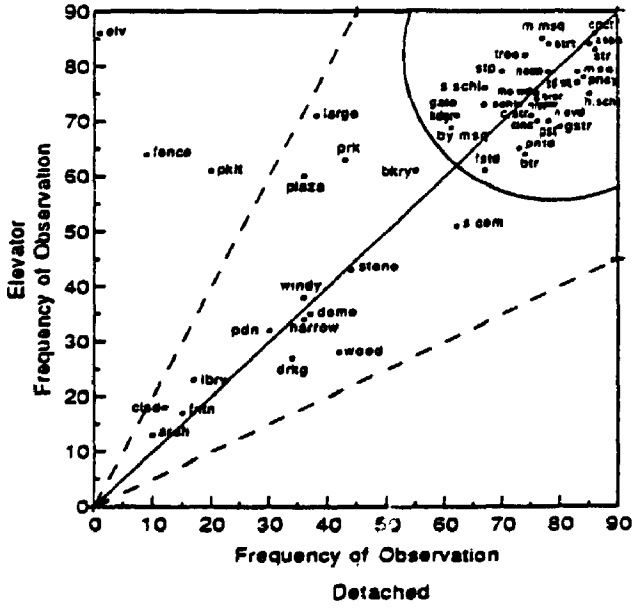


Figure 8-12



areas. Two other features, wall closets and decorated ceilings, have lower observation in Attached and Detached areas. Both these features are common to Elevator apartments, as their resemblance with the Traditional area suggests. The last two features, "high ceiling" and "small window", as Table 8-5 implies, are not features common to Elevator apartments.

Table 8-5: Features of higher observability to residents of traditional houses than to residents of Attached (A), Detached (D), and Elevator (E) apartments.

Table 8-6: Features of higher observability by residents of Attached, Detached, and Elevator apartments, than by residents of Traditional houses.

Table 8-5

Features	TA	TD	TE
adobe	X	X	X
wood	X	X	X
used roof	X	X	X
stairs	X	X	X
multi level	X	X	X
inner window	X	X	X
stone	X	X	X
inner courtyard	X	X	X
mashraka	X	X	X
fountain	X	X	X
arch	X	X	X
ka'a	X	X	X
iwan	X	X	X
decor wall	X	X	X
pitch roof	X	X	X
domed ceiling	X	X	X
wall closet	X	X	
decor ceiling	X	X	
no lattice	X	X	X
high ceiling			X
small window			X
Total	18	19	19

Table 8-6

Features	TA	TD	TE
one level	X	X	X
concrete	X	X	X
inner room	X	X	X
balcony	X	X	X
joint flat roof	X	X	X
paper wall	X	X	X
glazed balcony	X	X	X
semi-glazed balcony	X	X	X
garden	X	X	X
single height	X	X	X
with lattice		X	X
side window		X	X
open plan	X		
Total	11	13	13

The feature "no lattice window" has high observability in the Traditional area, moderate in the Attached area and low observability in Detached and Elevator areas. In Traditional houses high observability is attributed to the presence of latticeless windows that usually face the inner courtyards. In Attached apartments, these features have only moderate observability, due to their general deterioration.

Table 8-6 shows 13 features with higher observability in modern areas than in the Traditional area. All these features are common to modern apartments, except for lattice windows, which are also common for Traditional houses despite their low observability. One of the 13 features, side windows, is common only to Detached and Elevator apartments. The last feature in Table 8-6, "open plan", is observed mostly by residents of Attached apartments, and to a lower degree (as the observation values in Table 8-1 show) by residents of Detached apartments, Elevator apartments, and Traditional houses. Attached apartments are small. So, most rooms are designed to open into the inner room. Big doors are used in between to transform the apartment into a large hall for special occasions. Though such cases are presented in Detached and Elevator apartments, the small size of Attached apartments could be the cause for the higher awareness of open plans.

The investigation of Figures 8-4,5, and 6 show some significantly different features among the three Modern areas. Figure 8-4 shows four features tending towards the Detached type when compared with the Attached type. These are: side window, low ceiling, garden, and wall paper. Only one feature, "no lattice window", strongly tends toward the Attached area. These results emphasis differences among both residential areas. In Figure 8-5, there are higher observation of seven features by residents of Elevator areas than by residents of Attached areas. These are: side window, glazed balcony, low ceiling, decorated ceiling, wall paper, arched ceiling, and garage. And, there are four features that tend toward the Attached area: no lattice window, open plan, weak lighting, and flat roof. Therefore, the Attached area shows greater differences with the Elevator area than with the Detached area.

Finally, Figure 8-6, shows two features that tend toward the Elevator area, the glazed balcony, and garage; and four feature that tend

toward the Detached area: small window, open plan, garden, and used roof. Therefore, the Detached area shows similarity in differences with Attached and Elevator areas.

From this section it is concluded that differences in observation of house features between residents of Traditional and modern houses are mostly due to the presence of such features. There are many features (32) which differentiate the observability between Traditional and the three Modern areas. In contrast, only 11 features distinguish the three types of Modern areas.

Neighbourhood

Figures 8-7 to 8-12 are related to neighbourhood elements. These figures show similar results to those of house features. Graphic inspection indicates that comparison of the Traditional neighbourhood with the Modern types of neighbourhoods has a scattered pattern, or weak correlation. Most of the features that lie outside the cone of strong resemblance are associated with specific neighbourhood types. Hence, correlation values show little significance. Table 8-7 and 8-8 summarized these results.

Tables 8-7,8 show 22 elements that differentiate the Traditional area from the three Modern areas, 14 of which strongly tend toward the Traditional area. These 14 elements are common to Traditional neighbourhoods. Two of these elements, the drinking fountain and library, resemble observation values for residents of Attached and Traditional areas. Libraries are mostly found in Detached neighbourhoods (see Appendix M-Library); however, the frequency of observation, indicated in Table 8-2, shows that relatively few residents in this area observed these sign elements. This is due to the small size of these libraries and their being part of national embassies or larger buildings. Therefore, libraries in Detached areas tend to have low profile of legibility.

Table 8-7: Elements with higher observability to residents of Traditional neighbourhoods than to residents of Attached (A), Detached (D), and Elevator (E) neighbourhoods.

Table 8-8: Features with higher observability to residents of Attached, Detached, and Elevator neighbourhoods than to residents of Traditional neighbourhoods.

Table 8-7

Elements	TA	TD	TE
old mosque	X	X	X
wood	X	X	X
adobe	X	X	X
windy street	X	X	X
narrow street	X	X	X
dead end street	X	X	X
covered street	X	X	X
stony street	X	X	X
public bath	X	X	X
coffee house	X	X	X
museum	X	X	X
arch	X	X	X
drinking fountain		X	X
library		X	X
Total	12	14	14

Table 8-8

Elements	TA	TD	TE
stairs	X	X	X
tree	X	X	X
new mosque	X	X	X
plaza	X	X	X
gate	X	X	X
inside fence	X	X	X
elevator			X
large street			X
Total	6	6	8

Table 8-8 shows 8 elements more frequently observed by residents of the three Modern areas than by residents of the Traditional area. Two of these elements, elevator and large street, are only common to Elevator neighbourhoods, as shown in Table 8-2.

Inspection of Figures 8-10 to 8-12, related to Modern areas, show few elements located outside the strong resemblance lines (dashed lines). The Attached area has two features, the traditional mosque and coffee house, that differentiate it from Detached and Elevator areas. For the Elevator area, three elements differentiate it from Attached and Detached areas: elevators, inner fences, and parking lots. The Detached area does not have any elements that significantly tend toward the Detached area, an indication of its high resemblance to Attached and Elevators areas.

There are many neighbourhood elements (22) differentiating observability of urban signs of the Traditional area from the three modern

areas, which have few elements (5) with significantly different observabilities.

8-4. Commonly Observed Signs

Close examination of Figures 8-1 to 8-12 show those house features and neighbourhood elements that are strongly correlated with high observability. These features are circled on the graphs and summarized in Tables 8-9 and 8-10. Their frequent observation ranges between 60 to 86. There are 14 house features clustered at the top right corner of Figures 8-1 to 8-6. Examination of these features helps to identify reasons for their high profile of observability. These clustered features represent 1) functional features for residences (e.g., living room, bedroom, kitchen) and 2) architectural and aesthetic forms (e.g., traditional plan, rectangular windows, plain walls, plain ceilings, and square rooms). Modern houses have several common features with higher observed values than for Traditional areas. These are: one-level house, single height, corridors, inner room, balcony, concrete, and tiles. All these features are common to modern construction, with the exception of corridors. The corridor represents a good example of how built forms affect the perception of the architectural elements. In every traditional house there is a corridor (*dawer*) before the bedrooms. It could be linked with the *mashraka* (inner balcony). In this case the corridor is open into the inner courtyard. As a result, some people may not differentiate the corridor from the *mashraka* or differentiate the *mashraka* from the corridor.

Some other features were highly observed only in two of the residential areas. For Detached and Elevator areas, these included the joined roof and lattice windows; for Attached and Detached, the "no-wall closet". Entry halls are highly observed by all residents of all neighbourhood types, with the exception of the Attached apartments, where around 55 percent have no entry halls.

Tables 8-9 and 8-10: House features and neighbourhood elements strongly correlated with high observability. T = Traditional, A = Attached, D = Detached, E = Elevator.

Table 8-9

	TA	TD	TE	AD	AE	DE
traditional plan	X	X	X	X	X	X
plain walls	X	X	X	X	X	X
plain ceilings	X	X	X	X	X	X
square room	X	X	X	X	X	X
outer window	X	X	X	X	X	X
rectangular window	X	X	X	X	X	X
airy house	X	X	X	X	X	X
sunlit	X	X	X	X	X	X
guest room	X	X	X	X	X	X
kitchen	X	X	X	X	X	X
living room	X	X	X	X	X	X
bedroom	X	X	X	X	X	X
bathroom	X	X	X	X	X	X
storage	X	X	X	X	X	X
one level				X	X	X
single height				X	X	X
corridor				X	X	X
inner room				X	X	X
open balcony				X	X	X
tile				X	X	X
concrete				X	X	X
entry hall		X	X			X
no-wall closet				X		
lattice window						X
joint flat roof						X
Total	14	15	15	22	21	23

Table 8-10

	TA	TD	TE	AD	AE	DE
grocery store	X	X	X	X	X	X
butcher shop	X	X	X	X	X	X
fast food restaurant	X	X	X	X	X	X
pharmacy	X	X	X	X	X	X
barber shop	X	X	X	X	X	X
clinic	X	X	X	X	X	X
elementary school	X	X	X	X	X	X
secondary school	X	X	X	X	X	X
high school	X	X	X	X	X	X
mosque	X	X	X	X	X	X
straight street	X	X	X	X	X	X
medium width street	X	X	X	X	X	X
not-covered street	X	X	X	X	X	X
asphalt street	X	X	X	X	X	X
minaret	X	X	X	X	X	X
cultural poster	X	X	X	X	X	X
painted sign	X	X	X	X	X	X
close-by mosque	X	X	X	X	X	X
concrete building	X	X	X	X	X	X
greengrocery	X	X	X	X	X	X
side walk				X	X	X
kindergarten				X	X	X
trees				X	X	X
neon sign				X	X	X
stairs				X	X	X
new mosque				X	X	X
strip commercial	X	X		X		
bakery	X		X		X	
gate						X
bus stop						X
Total	22	21	21	27	27	28

Table 8-10 shows 20 neighbourhood elements with high observability (clustered at the top right corners of each graph in Figures 8-7 to 8-12). As in the case of house features, these elements are related to 1) functional needs, suchas school, grocery store, clinic, cultural poster; 2) design form, such as straight street, medium-width street, not-covered street; and 3) materials, such as asphalt and concrete. Modern areas have five highly observed elements, these are: new mosque, stairs, neon signs, trees, and kindergarten. Strip commercial areas have high observability in Traditional, Attached, and Detached areas; and the bakery has a high observability in Traditional, Attached, and Elevator areas. Detached and Elevator areas show similar observability values for gates and bus stops.

This section shows that function, form, and material of house features and neighbourhood elements highly affect the degree of sign observability.

8-5. SUMMARY

People perceive each actual sign to various degrees, especially those signs which have a low profile of imageability and legibility. Measurement of correlation coefficient showed no significant difference in the degree of observability of house features and urban elements among residents of all neighbourhood types. A careful inspection of the plotted observation values shows that the Modern areas have clearer positive correlations than that those found between Traditional and Modern types. This suggests higher differences (though not statistically significant) in observability of house features and neighbourhood elements between Traditional and other Modern residential types.

The observability of signs (imageability-legibility) can be affected by several factors, summarized by six points. 1) Intensity of Signs: When the number of an element is high, the possible interaction with the element increases. The frequent observation of signs are demonstrated by lattice windows, drinking fountains, and bus stops. 2) Functional Landmarks: People remember places that serve their needs, regardless of the residential type. Examples of such elements are: living rooms, bedrooms, guest rooms, kitchens, pharmacies, schools, mosques, and commercial areas. 3) Scale: the relative size of elements in respect to their surroundings affects the legibility of such features. Drinking fountains in modern areas are small and usually belong to the larger lement of mosques or stone walls. So, residents, as shown in Tables 8-2, recorded moderate observability values. It is difficult to recognize a small drinking fountain from the other side of the street. In Traditional areas, the drinking fountain is architecturally distinctive (imageable) from the surroundings and big enough to see (legible). Other examples of

the effect of scale are: strip commercial developments, plazas, schools in modern residential areas, and the *Ka'a* inside the Traditional house. 4) Aesthetics: This factor is a subjective issue, however, a number of cases can be, to a certain degree, agreed upon in aesthetic evaluation, such as distinctive building styles, clean and dirty streets, blight and new structure, and tidy or messy places. Aesthetic factors affect one's memory of what is seen. Cultural signs on walls are a good examples, where people continuously complain about their messy appearance on tree trunks, building entrances, electrical poles, schools doors, etc. The existence of this problem makes people effortlessly aware of it, and so they remember it. 5) Materials: material used for construction affect one's mental image since they are characterized by colour, texture, and touch. It is easy to distinguish between asphalt, concrete, wood, and stones. The existence of such materials is noticeable, since they carry functional and aesthetic characteristics. 6) Natural Elements: Trees, parks, and fountains are necessary natural elements for shade, cool air, and relaxation. They stand in contrast with the built environment; they are, therefore, legible. Parks and fountains are observed in different degrees by residents of all residential areas because of their low intensity.

These six factors affect one's observations and mental images of what constitute their living places. This image formation is the first step to gain information from the environment and affects one's spatial tendency or appreciation of house features and neighbourhood elements. The following chapter discusses inhabitants' appreciation of their houses and neighbourhoods.

CHAPTER 9. PRAGMATIC ANALYSIS

9-1. Introduction

Perception-cognition of signs in an urban environment is the first step toward geographical semiotic usage. The second step is the understanding of the pragmatic meaning(s) of signs in the urban context. This chapter considers the pragmatic meanings of signs by examination of the relation of signs to behaviourial patterns of people. This examination provides evidence of people's positive and negative images of house and urban signs. Consideration of inhabitants' preference and satisfaction helps to identify the significant differences among their images of urban signs. These urban signs are combinations of architectural and urban features/elements of the built environment in any of the four neighbourhood types: Traditional, Attached, Detached, and Elevator. At this stage, main hypothesis states that:

> there is no significant difference in the degree of preference of and level of satisfaction with urban signs (features/elements synthesis of houses, streets, and neighbourhoods) among residents of the four types of residential areas.

Inhabitants' expressions of preference and satisfaction are bases for discovering of the pragmatic meanings of urban signs. Two methods are used: verbal and practical. The verbal method is to directly question people's preference and satisfaction with urban signs in their neighbourhood; while the practical method comes from examination of inhabitants' modification, or any expressed desire for modification of their living places (houses or neighbourhoods). On the one hand, verbal expression can be confirmed in practice. One could say, "I prefer an open plan, so I removed walls among rooms". On the other hand, people may indicate verbally their positive preference for a particular feature or

set of elements, while in practice, they may act in an opposite way. For example, the balcony is regarded as a favourite element in modern houses, though some people enclose it and remove its use. What does such paradoxical behaviourial tendency mean? As indicated in Chapter 3, people's behaviourial patterns are not only influenced by their personal views and experiences, but also by social and cultural conventions and expectations. Cultural and societal constraints may induce people in practice to express a preference or source of satisfaction, such as glazing (enclosing) the balcony for privacy. On the other hand, examination of verbal evidence may reveal less preference of, or satisfaction with, a glazed balcony. This may mean loss of a favourite feature or an identity, such as loss of a treasured place where a resident has direct contact with nature, or sustains a favourite view.

This example does not necessarily imply that people always love a sign (an open balcony), because they may glaze their balcony as a preferred form to an open one. Or, with the lack of options, privacy might be evaluated by residents as a higher priority than an open balcony. It is a subjective matter. So, what people in practice tend to modify in their environment might mean something different from their best-liked environment. From this example it can be concluded that practical change of living place might be done to maintain a certain degree of satisfaction and preference of the environment while total preference and satisfaction is still an unrealized ideal. Not all people can obtain exactly what they want. They may have some of their preferred architectural features, but as seen later, people always tend to change some elements of their environment as their interests, circumstances, and goals change. For who can give them Eden?!!

One could say, "I do like my neighbourhood, though I wish to modernize the light fixture, widen streets, plant more trees, and prevent cars from using their horns. " These preferred changes may be reasons to

express dissatisfaction with the built environment of his/her neighbourhood, or its uses by others, especially when it comes to convenience. However, being restrained by the fact that they can neither improve their neighbourhood, nor move to a better neighbourhood, residents may still end up saying "Yes we feel satisfied here". To be less extreme, changes in built environments are not always the results of low degree of preference or satisfaction with urban signs. It could be the result of peoples' continuous needs for modification and improvement to express "the image of Eden", or just to seek reward in the hereafter by building a mosque, or a water fountain.

The previous discussion suggests that both verbal and practical bases seem to be equally important in the analysis to understand pragmatic meanings of urban signs.

9-2. Verbal Based Degrees of Preferences

Collecting data to analyze inhabitants' preference and satisfaction with built environments was done in three steps. The first step was the determination of people's preference for each urban sign. The second step was to determine, in an overall sense, whether inhabitants were satisfied with their present domains and neighbourhoods, or not. The final step was to determine the most to the least preferred neighbourhood types (Traditional, Attached, Detached, Elevator, and Villa) that people prefer as living places. These questions were directed to inhabitants in every neighbourhood types[4]. (See Appendix C, Part Two, for the questionnaire).

Villa-type neighbourhoods do not exist presently in Damascus. In Almazza, however, there are two neighbourhoods (Eastern Villas and Western

[4] Five-point scale, as a forced ranking scale, used for collecting data for Chapters 9-10, has two limitations. First, it does not measure the absolute standing and the interval between items, but, instead, gives a relative order. Second, since it points at the preferred item, the sequence of the remaining items offers a limited number of choices. Thus, there is a parallel between the actual life choice situation and the measurement format. In other words, what people record on this scale, maps their image of the actual world.

Villas) that were originally built as a villa-type. Later on, their inhabitants transformed them into Detached houses. Villa-type, however, is well-known as summer houses are built extensively in the western hilly villages (Madaia, Bakeen, Blodan, and Zabadani). Since the villa-type is well-known to Damascenes, it is added to the list.

9-3. Preference for House Features and Urban Elements

Inhabitants of the four residential areas were asked to check on a five-point scale their degrees of preference for each of the 63 house features and 58 neighbourhood elements that were recited to them from two tables, the design feature tables used in Chapter 4. These represent not only sign elements that exist in their neighbourhoods but also sign elements that exist in other neighbourhoods (modern and traditional urban signs). Their answers, therefore, are not necessarily a reflection of a direct experience with these signs. Analytic method used for the collected data is "the sum of the weighted values", (see Appendix E). Two examples (Traditional and Attached neighbourhoods) of the resultant frequency tables are shown in Appendix F.

After weighting and summing the frequency of values in the collected data, simplification of the results are sought through two functions. First, thresholds for what can be considered as high or low-preferred signs are set according to the following premise: If each of the 86 interviewees of each neighbourhood selected only one degree of preference on the five-point scale (1,2,3,4, or 5), then the sum of the weighted values will be extreme on every point of this scale, that is 86, 172, 258, 344, and 430. Second, each sum of the weighted values is replaced by symbols. If the sum of the weighted values of a sign falls within the range 86 and 172, the degree of preferability of this sign is extremely low and is characterized by the symbol ".". Similarly, if the sum of weighted values of a sign falls within the range 173 and 257, it is considered to have low preference and is categorized by (L); values

between 258 and 343 are considered moderately preferred and are categorized by (M), and finally sums between 344 and 430 are classed as highly preferred and are shown by (H) (see Tables 9-1,2,3, and 4).

Table 9-1: Sum of weighted values of people's preference for house features with similar degrees of preferability among residents of the four neighbourhoods, T, A, D, and E.

House Sign Feature	Sum of Weighted Values T	A	D	E	Level of Preference T	A	D	E
spacious rm	400	384	371	375	H	H	H	H
big window	344	354	347	346	H	H	H	H
guest rm	382	373	358	355	H	H	H	H
kitchen	397	372	374	381	H	H	H	H
dinning rm	372	374	344	385	H	H	H	H
living rm	405	386	382	379	H	H	H	H
bed rm	409	388	380	396	H	H	H	H
bath rm	398	373	360	377	H	H	H	H
garden	379	393	377	375	H	H	H	H
tree/plant	405	399	391	389	H	H	H	H
fountain	401	382	360	351	H	H	H	H
stone/marble	368	347	367	351	H	H	H	H
tradition plan	322	288	299	298	M	M	M	M
open plan	273	312	305	292	M	M	M	M
one level	307	305	325	324	M	M	M	M
multi level	326	329	321	332	M	M	M	M
square rm	335	336	325	314	M	M	M	M
unsquare rm	258	282	275	267	M	M	M	M
medium size rm	286	284	283	280	M	M	M	M
medium height clg	267	264	258	271	M	M	M	M
high ceiling	329	313	306	314	M	M	M	M
plain ceiling	258	270	288	275	M	M	M	M
plain wall	258	278	277	278	M	M	M	M
doors between rms	288	293	267	314	M	M	M	M
corridor	334	335	343	299	M	M	M	M
entrance	331	327	334	295	M	M	M	M
outer window	329	323	324	327	M	M	M	M
rectangular window	296	310	312	313	M	M	M	M
semi-glazed balcony	279	258	258	268	M	M	M	M
pitched roof	331	316	307	301	M	M	M	M
concrete bldg mater	293	284	308	286	M	M	M	M
multi height clg	232	184	211	208	L	L	L	L
low ceiling	185	171	200	197	L	L	L	L
no wall closet	244	248	243	249	L	L	L	L
without lattice w.	243	255	196	191	L	L	L	L
glazed balcony	211	203	182	224	L	L	L	L
metal	251	249	248	257	L	L	L	L
small room	164	148	171	150	.	.	.	.
small window	155	166	167	151	.	.	.	.

H = High, M = Moderate, L = Low, . = extremely low preference

Table 9-2: Sum of weighted values of people's preference for house feature with different degrees of preferability among residents of the four neighbourhoods, T, A, D, and E.

House Sign Feature	Sum of Weighted Values				Level of Preference			
	T	A	D	E	T	A	D	E
single height clg	362	345	347	327	H	H	H	M
decor ceiling	368	314	311	305	H	M	M	M
decor wall paper	241	264	244	264	L	M	L	M
decor wall	376	320	314	302	H	M	M	M
arched rm	345	318	301	305	H	M	M	M
domed rm	297	287	233	252	M	M	L	L
main rm, *ka'a*	350	324	288	302	H	M	M	M
iwan	356	320	321	287	H	M	M	M
inner rm	366	357	318	305	H	H	M	M
store	360	315	332	331	H	M	M	M
wall closet	355	355	349	324	H	H	H	M
mashraka	366	319	309	297	H	M	M	M
balcony	336	370	367	374	M	H	H	H
inner courtyard	403	345	336	320	H	H	M	M
inner stairs	353	350	345	319	H	H	H	M
flat roof	344	333	331	302	H	M	M	M
joint roof	149	229	227	245	.	L	L	L
inner window	362	363	349	326	H	H	H	M
side window	202	296	334	310	L	M	M	M
arched window	362	313	304	294	H	M	M	M
lattice window	319	316	358	353	M	M	H	H
wood	358	320	315	314	H	M	M	M
adobe	286	211	202	184	M	L	L	L
tile	367	351	326	327	H	H	M	M

H = High, M = Moderate, L = Low, . = extremely low preference

Table 9-3: Sum of weighted values of people's preference for neighbourhood elements with similar degrees of preferability among residents of the four neighbourhoods, T, A, D, and E.

	Sum of Weighted Values				Level of Preference			
Ngbd Sign Elements	T	A	D	E	T	A	D	E
plaza	368	361	345	390	H	H	H	H
bakery	389	350	359	345	H	H	H	H
clinic	405	361	383	355	H	H	H	H
pharmacy	398	363	391	367	H	H	H	H
kindergarten	400	356	356	363	H	H	H	H
elementary school	401	344	354	355	H	H	H	H
secondary school	392	344	345	344	H	H	H	H
library	379	367	344	353	H	H	H	H
mosques/church	407	373	368	379	H	H	H	H
nearby mosque/church	395	360	365	356	H	H	H	H
large st.	365	369	344	350	H	H	H	H
straight st.	374	364	369	362	H	H	H	H
sidewalk	392	386	388	384	H	H	H	H
pedestrian rd.	390	369	351	347	H	H	H	H
tree/plant	406	398	410	412	H	H	H	H
drinking fountain	397	371	344	344	H	H	H	H
fountain	361	371	361	344	H	H	H	H
stone/marble bldg	371	353	367	377	H	H	H	H
domed building	333	304	280	289	M	M	M	M
covered st.	320	258	269	258	M	M	M	M
not-covered st.	330	336	321	320	M	M	M	M
medium st.	311	294	314	298	M	M	M	M
asphalt st.	334	312	302	304	M	M	M	M
neon sign	292	288	295	289	M	M	M	M
concrete bldg	303	300	318	279	M	M	M	M
far mosque/church	235	257	241	218	L	L	L	L
dead-end st.	218	177	173	176	L	L	L	L
narrow st.	218	184	213	196	L	L	L	L
cultural poster	218	195	176	196	L	L	L	L

H = High, M = Moderate, L = Low preference

Table 9-4: Sum of weighted values of people's preference for neighbourhood elements with different degrees of preferability among residents of the four neighbourhoods, T, A, D, and E.

	Sum of Weighted Values				Level of Preference			
Ngbd Sign Elements	T	A	D	E	T	A	D	E
strip commerce	361	326	338	313	H	M	M	M
grocery store	383	354	354	331	H	H	H	M
butcher shop	384	337	348	308	H	M	H	M
greengrocery	388	346	354	322	H	H	H	M
fastfood rest.	374	344	323	320	H	H	M	M
coffee house	271	228	193	200	M	L	L	L
barber shop	373	346	362	316	H	H	H	M
high school	392	324	337	345	H	M	M	H
museum	359	303	296	281	H	M	M	M
pbc baths	297	226	195	185	M	L	L	L
old style mosque	391	357	335	321	H	H	M	M
new style mosque	327	344	344	355	M	H	H	H
minaret	402	357	341	333	H	H	H	M
windy st.	266	234	258	243	M	L	M	L
gate / alley door	326	373	353	384	M	H	H	H
arched	359	312	285	283	H	M	M	M
painted sign	311	249	248	232	M	L	L	L
adobe	295	225	192	192	M	L	L	L
wood	349	319	316	302	H	M	M	M
stone	364	316	292	279	H	M	M	M
metal	231	273	249	265	L	M	L	M

H = High, M = Moderate, L = Low preference

It is noticeable that there are some signs with similar degrees of preferability among residents of the four neighbourhoods. These signs are sorted out and listed in Table 9-1 and 9-3. Also there are some signs that differ in the degree of preferability among the residents of the four neighbourhood types. These signs are carefully examined later to determine differences in the degree of preference among residents of the four neighbourhoods (see Tables 9-2 and 9-4).

Discussion

House Design features

Table 9-1 shows signs that have similar degree of preferability. Four categories are recognized: H,M,L, and ".". When the sign is related to the inhabitants' primary needs and comfortableness, it is preferred not to be replaced or omitted from their living places. The residents agree

Highly (H) on their preference to have the following design features invariably in their domains: a spacious room, big window, guest room, kitchen, dining room, living room, bathroom, garden, trees, plants, fountain, and stone and marble construction materials. The second category represents preferable signs with Moderate degree (M). Some of these signs are related to the architectural characteristics that point to optional form, such as open plan or traditional plan, single or multi-level house, square or not-square rooms, and high or medium-height ceiling. Other sign features point to functional uses, such as entrance, corridor, door between rooms, outer window, and semi-glazed balcony. Finally, some signs indicate aesthetic values since they affect the appearance of space, such as plain walls and ceilings, rectangular windows, pitched roofs, and concrete building materials.

The third category of Table 9-1 shows low-preference features (L), multi-height ceiling, low ceiling, no-wall closet, no-lattice window, glazed balcony, and metal structures. The final category shows two features, small room and small windows, that are extremely low in preference (.).

The multi-height ceiling is known as a unique feature of the Traditional house. With different size of rooms, the height changes. For example, the *Ka'a*, the main room, has a double-height ceiling (5 to 6 meters) while bedrooms in the second floor have moderate height (3 to 4 meters). *Ka'a* is an area for many people to gather. With the double-hight ceiling in *Ka'a* and some other first-floor rooms, it becomes possible to construct lower and upper-window rows to ensure good ventilation and proper natural lighting. [5] The result of the survey shows

[5] Besides ventilation and lighting, there are some other psychological effects of high ceilings. With a high ceiling, people feel the desire to stand; also, a big spacious room with a high ceiling relaxes eyes from close concentration. On the other hand, under low ceilings, people feel pressed and desire to sit. In Damascus, Dr. Perhan Tiara designed the Architectural School and adopted this theory. He noticed in the old building that students always stood by their drawing tables, which made them feel tired and moved a lot. He attributed these effects to the high ceilings of the studios. In the new buildings, though, the studios are large and ceilings are built low, (2.7 meters). I personally observed these effects on behaviour during my study time from 1978 to 1982.

that people do not care for double-height ceilings, but they do prefer a high or a medium-high ceiling to a low one. This could relate to appreciation for more air circulation and a feeling of spaciousness. What is the standard limit for high, moderate and low ceilings? The survey did not discuss that with the interviewees and the determination of what is high and low is presumed to be conceptual. Generally, however, when the height of the ceiling is close to the head (less than 2.80 meters), it is considered low; and when it has a typical height of modern architecture (2.90 to 4 meters), it is considered moderate; and above that (4 meters), it is considered high.

Regarding windows, a low preference was recorded for non-lattice windows. Preference for lattice windows can be explained by the socio-religious values for privacy, and the desire to obscure the view from outside without blocking ventilation and light. In addition, there is the need to reduce day light entering the room during rest times. In the morning, people open their windows wide to change the air and to hasten their waking from sleep. During noon-nap time, less light is achieved by shutting the lattice window.

The low preference (L) for the totally-glazed balcony seems to be contradicted by the increasing number of people who glaze their balconies, as cited earlier. On the one hand, glazed balconies might seem ugly from street level, as was the opinion expressed by some people during the interviews. From inside the house, however, glazed balconies block out views from the street and change the idea of open space. On the other hand, functionally, or practically, a glazed balcony is welcome. It provides an extension of the adjacent room by adding some or all of the balcony. It can also be used as an additional room to accommodate increased family size.

Finally, metal is less preferred than wood. However, practically,

use of metal windows (and to a lesser extent metal doors) is widely spread in almost every house. Wooden doors are used for inner doors, main entrances, and windows. Metal (steel, or aluminum) is increasingly used as a replacement for wooden outer openings such as windows and balcony doors. In addition, all three: glazed balconies, building fences, and building gates are always made out of metal. Wide use of metal should not be interpreted as a preference of metal over wood, but, practically metal doors and windows are stronger, easier to construct, and require less maintenance.

Table 9-2 shows sign features and their corresponding degrees of preference expressed differently by inhabitants of the four neighbourhood types. The different degrees of preference for these sign features related to people's different experiences with them -- for example, the imageability and legibility of the signs (see previous chapter), and the social circumstances of the people (see Appendix H). These signs may be divided into four types. First, signs that are typical of Traditional architecture. They are scored with higher degrees of preferability by residents in Traditional neighbourhoods than by residents of Modern areas. In the following discussion, the degree of preference of a sign by residents of the four types of neighbourhoods is indicated within parentheses in this sequence (Traditional, Attached, Detached, Elevator). Typical Traditional architectural signs include: decorated ceiling (H,M,M,M), decorated wall (H,M,M,M), arched room (H,M,M,M), *Ka'a* (H,M,M,M), *iwan* (H,M,M,M), *mashraka* (H,M,M,M), inner window (H,H,H,M), arched window (H,M,M,M), wood (H,M,M,M), and adobe (M,L,L,L). Certainly, wood is widely used in Traditional structures since it is part of the wall structure (especially in second floors), ceiling, and decorative material. Two other traditional house features, domed room (M,M,L,L) and inner courtyard (H,H,M,M), have a shared degree of preferability by residents of both Traditional and Attached residential areas.

Second, some signs are typical of modern, but not Traditional architecture. These are: inner room (H,H,M,M), balcony (M,H,H,H), and joint roof (.,L,L,L). A third type is related to signs that are typical of Traditional and Modern architecture, but are presented either in different or in similar design concepts. The signs of the former type are: storage room (H,M,M,M), wall closet (H,H,H,M), inner stairs (H,H,H,M), flat roof (H,M,M,M), side window (L,M,M,M), and lattice window (M,M,H,H). The signs of the latter type are: decorated wall paper (L,M,L,M) and tile (H,H,M,M).

The difference in design concept of a sign feature means the existence of a sign in different shapes, locations, and or sizes. In a Traditional house, the storage room (or *Almoneh* room) is located under stairs, in a designated room on the first floor, or in the basement, with various heights that range from around 1 to 3 meters. In Modern houses, the storage area can be found above in the battery area (bathroom, a W.C., kitchen, laundry room) or in the corridor. It is called *Saqifa*, and ranges in height from around 0.5 to 1.70 meters. *Saqifa* is also found in some Traditional houses.

In Traditional houses, inner stairs and flat roofs are used by family members only. In modern buildings, however, the stairs and the flat roof are located in the semi-private area and are used by a number of families. Side windows in Traditional houses open onto the semi-private and semi-public streets; while in Modern designs, side windows open onto the non-front-setback. Finally, lattice windows are traditionally made of small wooden strips nailed vertically, horizontally, and diagonally to form a screen with decorative shapes, such as stars and squares. It may slide upward; hang from the top to be pushed outward from the bottom; or be fixed in place. The lattice window in modern buildings is made of horizontal wooden pieces hung to be rolled up, or hung from the left and right sides of the window frame to be pushed outward.

Summary

Analysis of the survey data shows that residents of the four neighbourhood types agree on the degree of preference for some sign features and disagree on some others. Considering these results, residents of the Traditional area scored 14 signs with distinctive degrees; residents of both Attached and Detached areas scored 0 signs; and residents of the Elevator neighbourhood scored 4 distinctive signs: single height ceiling (H,H,H,M), wall closet, (H,H,H,M), inner stairs (H,H,H,M), and inner window (H,H,H,M). It is concluded that residents of the Traditional area have significantly different preference for sign features than residents of the three Modern areas, who show rather high similarity in such preference to each other.

Neighbourhood Design Elements

Residents of different neighbourhoods have similar degrees of preferability for some sign elements, as shown in Table 9-3, but differ about others, as shown in Table 9-4. There are three degrees of preferable sign elements: high (H), moderate (M), and low (L)[6]. Highly preferred signs tended to be functional signs: plaza, bakery, clinic, pharmacy, kindergarten, elementary school, secondary school, library, close mosque, large straight street, side-walk and pedestrian route, trees, plants, drinking fountain, fountain, and stone and marble constructions.

Moderately preferable signs tended to be form and aesthetic signs. These included: covered and non-covered streets, medium-width street, asphalt street, domed buildings, neon signs, and concrete structures. Low preference signs were mostly related to the degree of convenience. They were: far-mosque (as opposed to highly preferred close-mosque), narrow and

[6] There are no elements of any type of neighbourhood that are absolutely not preferred. This could be the result of shortcomings in the sign list used during the survey. However, through an open question, inhabitants expressed their wish to make some changes in their neighbourhoods. They mentioned some signs that had extremely low preference. These were: dirty and noisy streets, cars, and electrical wires hanging unsystematically in the traditional streets.

dead-end street (as opposed to highly preferred straight large street), and cultural posters (as opposed to moderately preferred neon signs). Cultural posters are found glued on walls, fences, doors, trunks, and lampposts. It might be argued that such behaviour denies the beauty of the city.

Table 9-4 shows signs with different degrees of preference, classified into three categories. First, there are 11 different elements with distinctive degrees of preferability for residents of the Traditional area. These 11 signs also share degrees of preferability by residents of the three modern areas. These elements are: strip commercial (H,M,M,M), coffee house (M,L,L,L), museum (H,M,M,M), public baths (M,L,L,L), new architectural style mosque (M,H,H,H), fence/door for alley (M,H,H,H), arch (H,M,M,M), painted sign (M,L,L,L), adobe (M,L,L,L), wood (H,M,M,M), stone (H,M,M,M). Of these 11 element signs, the "new architectural style mosque" is the only sign that is modern. However, Traditional residents do not welcome it nearly as much as those of the three Modern areas. Second, there are no signs with distinctive degrees of preference for residents of Attached and Detached neighbourhoods; and there are only four signs with distinctive degrees of preferability noted by residents of the Elevator neighbourhood -- grocery store (H,H,H,M), greengrocery (H,H,H,M), barber shop (H,H,H,M), and minaret (H,H,H,M). Finally, several elements share degrees of preference for residents of two neighbourhood types; these signs are: fast food restaurant (H,H,M,M), old style mosque (H,H,M,M), butcher shop (H,M,H,M), windy street (M,L,M,L), high school (H,M,M,H), and metal (L,M,L,M).

Test of Significance

How similar are residents of the four neighbourhood types in their preference of urban signs? The Mann-Whitney test is applied to answer this question. It deals with two samples at a time; therefore, with permutation of two, the test is carried out six times as shown in Table 9-

5. The null hypothesis to test states that:

Between residents of two different neighbourhood types, there is no significant difference in the degree of preference of urban signs (house/neighbourhood).

Table 9-5: Results of Mann-Whitney Test on residents' preference for house features and neighbourhood elements, at the 0.1 significance level (P). HO = null hypothesis, T = Traditional, A = Attached, D = Detached, E = Elevator

	Feature Preference		Element Preference	
Pair of Ngbd	P	HO	P	HO
TA	0.34	ACCEPT	0.08	REJECT
TD	0.58	ACCEPT	0.30	ACCEPT
TE	0.30	ACCEPT	0.09	REJECT
AD	0.81	ACCEPT	0.56	ACCEPT
AE	0.86	ACCEPT	0.96	ACCEPT
DE	0.80	ACCEPT	0.73	ACCEPT

Table 9-5 shows that at the 0.1 probability level the null hypothesis is accepted in all paired cases, with two exceptions presented in the "Element Preference" columns. There are the cases of Traditional and Attached (TA), and Traditional and Elevator (TE). Both cases have significant differences at the 0.1 probability level and, therefore, the associated null hypotheses are rejected. In comparing the responses of residents living in the Traditional area with those of the Modern areas, the probability level is smaller than the probability level compared to responses between residents living in any two different Modern neighbourhoods. It can be concluded that there is a difference, though not always significant, of preference for urban signs (house/neighbourhood) between residents living in Traditional and Modern residential areas.

9-4. Satisfaction with the Domain and Neighbourhood

It is difficult to ascertain from step 1 whether the inhabitants are generally satisfied with their premises and neighbourhoods. Therefore, two direct questions were asked to clarify their degree of satisfaction. Inhabitants were directly asked to express on a five-point scale, their

degree of satisfaction, first with their houses, and second with their neighbourhoods. Table 9-6 shows the sum of the weighted values that are indicated in the Frequency Table in Appendix G. People's satisfaction with their houses and neighbourhoods is moderate, except for the Detached house residents, who reveal a slightly higher degree (350) of satisfaction with their neighbourhood than residents of Traditional, Attached, and Elevator neighbourhoods, who recorded 323, 302 and 320 degrees of preferability respectively. The Detached neighbourhood appeared to the author to be the quietest, cleanest, and greenest of all four case-study neighbourhoods. This is likely reflected in the responses recorded.

Table 9-6: Sum of weighted values of inhabitants' level of satisfaction with their houses and neighbourhoods. M = Moderate, H = High.

	House Satisfaction		Ngbd Satisfaction	
	Weight	Stis.	Weight	Stis.
Traditional	325	M	323	M
Attached	318	M	302	M
Detached	331	M	350	H
Elevator	336	M	320	M

How similar are the degrees of satisfaction of residents living in different neighbourhoods with their living domains? Through application of the Mann-Whitney Test, the distribution of frequency values scored by residents of every two neighbourhood types is tested (see Appendix G). The null hypothesis states that:

> Between residents of any two different neighbourhood types, there are no significant differences in their degrees of satisfaction with their own living places (house/neighbourhood).

The result of the Test is shown in Table 9-7. At the probability level (P) of 0.1, H0 is accepted. People of all types of neighbourhoods are relatively similarly satisfied with their residences. The high P values in Table 9-7 and the sum of the weighted values indicate that people

throughout the city are satisfied with their living places. This satisfaction could be a result of many factors. 1) people have familiarity with the living place, which they have modified to reflect their own preferences. 2) people's social life have been developed over long periods of living in these neighbourhoods (see Appendix D, Table 1), for 10 years or more). 3) They perceive little or no opportunity to change their type of housing. 4) They have little or no experience with other environments.

Table 9-7: Results of Mann-Whitney Test on residents' satisfaction with their houses and neighbourhoods at the probability level (P) of 0.1. H0 = null hypothesis, T = Traditional, A = Attached, D = Detached, E = Elevator

	House Satisfaction		Ngbd Satisfaction	
Pair of Nghd	P	H0	P	H0
TA	0.83	ACCEPT	0.67	ACCEPT
TD	0.83	ACCEPT	0.83	ACCEPT
TE	0.99	ACCEPT	0.83	ACCEPT
AD	0.67	ACCEPT	0.60	ACCEPT
AE	0.83	ACCEPT	0.99	ACCEPT
DE	0.91	ACCEPT	0.75	ACCEPT

9-5. Preference for Neighbourhood Types

Though people reveal satisfaction with their living places, they also may like other types of neighbourhoods more than they like their own. Thus, a question was proposed for residents to rank the five types of house/neighbourhoods (Tradition, Attached, Detached, Elevator, and Villa) from the most to the least preferred living place.

The collected data that appear in frequency tables given in Appendix H, were first weighted and summed as shown in Table 9-8, and ranked from highest to lowest, as shown in Table 9-9. These tables show that residents living in Traditional housing rank living in Traditional neighbourhoods first, and living in Villa neighbourhoods second. Residents living in Modern areas, A,D, or E give living in a Villa neighbourhood the highest preference, followed by living in Detached neighbourhoods.

Table 9-8: Sum of weighted preference frequencies expressed by residents of different residential types (shown in columns) for the different types of neighbourhoods (shown in rows).

Table 9-9: Most to least preferred neighbourhood types as a living place by residents living in T,A,D, and E, neighbourhoods. * = Neighbourhoods that have the same degree of preference.

Table 9-8

	T	A	D	E
Traditional	347	243	269	208
Attached	182	234	208	209
Detached	250	286	306	291
Elevator	177	184	166	213
Villa	308	342	346	369

Table 9-9

	T	A	D	E
most				
.	T	V	V	V
.	V	D	D	D
.	D	T	T	E *
.	A	A	A	A *
.	E	E	E	T *
least				

The Detached housing neighbourhood is selected by residents of the Traditional neighbourhood as a third choice, while the Traditional housing neighbourhood is selected in the third place by residents of both Attached and Detached neighbourhoods. Residents of Traditional, Attached, and Detached neighbourhoods selected Attached living areas as their fourth choice, leaving the Elevator neighbourhood the last choice. Residents of the Elevator neighbourhood did not discriminate in their preference among Traditional, Attached, and Elevator neighbourhoods. The background of residents of the Elevator neighbourhood, as shown in Appendix D, Table 1, does not adequately describe their previous living experience in other neighbourhood types. Therefore, their degree of neighbourhood preference is affected by their perception of its physical conditions and reputation. One wonders if residents of the Modern areas had experienced living in a Traditional neighbourhood, would they prefer it to a Villa neighbourhood? Also, would residents of the Traditional area have different preferences if they had experience living in Modern housing?

How much do residents of the four neighbourhood types, T,A,D, and E, differ in their preferences for different types of living places? The Mann Whitney U-Test is employed to answer this question and to test the null hypothesis that:

There are no significant differences in the preference of living places (house/neighbourhood) between inhabitants of any two different neighbourhood types.

The results of the Mann-Whitney Test, shown in Table 9-10, show no difference at the 0.1 probability level between residents of any two residential types, TA, TD, TE, AD, AE, and DE. The Null hypotheses is accepted for all paired combinations.

Table 9-10: Results of Mann-Whitney Test on residents' preference for five different neighbourhood types at 0.1 probability level (P). HO = null hypothesis.

pairs of neighbourhoods	P	HO
Traditional and Attached	0.87	ACCEPT
Traditional and Detached	0.95	ACCEPT
Traditional and Elevator	0.99	ACCEPT
Attached and Detached	0.94	ACCEPT
Attached and Elevator	0.79	ACCEPT
Detached and Elevator	0.93	ACCEPT

Summary

Through three verbal steps, residents expressed their satisfaction and degree of preference for their own house features and neighbourhood elements. Though people experience urban signs in different urban settings, they expressed relatively similar satisfaction and preference for signs. Generally, these relate to functional signs, such as living room, bedroom, kitchen, bakery, mosque/church, and kindergarten. The difference in preference for urban signs among residents of all neighbourhoods shows a direct relation to the immediate use of such signs. For example, signs that exist in the Traditional neighbourhood were preferred by residents of this neighbourhood in higher degrees than by residents of Modern areas who did not have such traditional signs in their living place, as inner courtyards, *Mashraka*, *ka'a*, coffee houses, public baths, and adobe.

In general, overall moderate percentages of satisfaction by

residents of the four neighbourhoods were expressed for their premises and neighbourhoods. Most residents of all neighbourhoods have shown some interest in moving to Villa-type, Detached or Traditional neighbourhoods, if they were able. But, why did people express satisfaction with their present neighbourhoods while some preferred housing in another neighbourhood as their first choice? Certainly, residents judge signs from different perspectives, which relate to convenience, culture, attachment, familiarity, reputation, and economical possibility. The following section examines what residents would like to do to their houses and neighbourhoods in order for them to better fit their needs. This is another way of examining residents' satisfaction with their houses and neighbourhoods.

9-6. The Degree of Satisfaction on a Practical Base

In directly questioning residents about their preference of and satisfaction with urban signs, some bias in their answers may hide the truth. Regarding preference, people may be idealistic. Almost everyone prefers a big house and a peaceful neighbourhood. But with the residents' difficulty to fulfil such desires, the measurement of the level of inhabitants' satisfaction with their living environment is important. However, in directly questioning inhabitants about their satisfaction with their built environment their answers may be affected by some social factors. Schorr notes:

> "In the first place, satisfactions cannot be directly measured but have to be inferred. To this end, it makes a considerable difference whether 'satisfaction' is operationally defined as an explicit statement that a person likes his or her neighbourhood or 'the absence of complaint when an opportunity of complaint is given'".
>
> (Schorr, 1964, cited in Gold 1980, p.171)

For example, living in an inconvenient environment, inhabitants may still evaluate their neighbourhood as good enough to live in as a result of their familiarity with it from childhood memories and social ties, not to mention, in some cases, that some inhabitants hide behind the word

satisfaction when they are unable to move to a better neighbourhood.

This section examines inhabitants' spatial behaviour through indirect questioning about modifications to their residential environment. Modifications are presumed to be an expression of preference and satisfaction with certain of one's house features and urban elements. This proposal is stated as Hypothesis 3:

> There are no significant differences among inhabitants' expression of satisfaction for their house features and neighbourhood elements among the four selected residential areas.

People were asked to identify any modifications that they had done or were planning to do in the future inside their houses. Also they were asked whether their modifications fitted Traditional and/or Modern styles. Concerning their neighbourhoods, people have no authority to make modification; it is the city's administrators' job. But inhabitants may wish to have something done. So the second question was "if you had the authority, what would you do to improve your neighbourhood?" The overall results of both questions, as shown in Table 9-11, give insight into the sign features of houses and neighbourhoods that inhabitants had or were willing to change. The answers for both questions manifest the different problems that inhabitants experience in their residential areas.

Table 9-11: Percentages of inhabitants who had modified, were planned to, or wished to modify their houses and neighbourhoods to maintain or create traditional (T) or modern (M) signification.

Changes in:	Tradition		Attached		Detached		Elevator	
	T	M	T	M	T	M	T	M
Houses	56	37	26	51	29	51	10	5C
Neighbourhoods	67	65	50	79	44	69	28	69

Discussion

House Features

Table 9-11 shows that inhabitants express their needs to maintain their house types either by renovation or by adding more marked traditional or modern architectural features. In the "House", we have 56, 51, 51, and 50 percent of people in the respective T, A, D, and E neighbourhoods who worked on or were planning to maintain the typical Traditional, Attached, Detached, or Elevator residential styles of their present houses. On the other hand, in Traditional houses, 37 percent of the residents are likely to apply Modern features. In Attached and Detached apartments, the percentages of residents applying traditional features to their domain are nearly equal: 26 and 29. In Elevator apartments only 10 percent of the residents expressed a desire to add traditional features to their domain. What types of signs did residents attempt to express in their residential structures?

There are many signs that inhabitants of the four residential neighbourhoods maintained or had already added to their domains, in different degrees. The most frequently desired features to change, as indicated in Table 9-12, can be categorized as traditional decoration, modern decoration, open plan, extended room size, and general renovation of the existing traditional or modern structure. Each category bears

Table 9-12: Percentages of inhabitants of each house type who had modified or were planning to maintain or add traditional (T) or modern (M) house features.

	Decor T	Decor M	Open M	Extend M	Renew T	Renew M
Tradition	17	3	5	2	<u>37</u>	<u>30</u>
Attached	<u>27</u>	15	19	14	5	<u>29</u>
Detached	<u>31</u>	<u>27</u>	14	9	0	9
Elevator	15	<u>27</u>	6	<u>21</u>	0	13

either traditional (T) or modern (M) features. The first category refers to the decoration of walls, ceilings, furniture, and paintings by different materials or fabrics, such as cloth, paper, wood, or gib.

The second category refers to "open plan" and "room extension". The concept of "open plan" differs from the concept of "room extension", though both are constructed by removing walls and doors between rooms. An "open plan" is one where inhabitants keep functional uses of rooms after removing walls and doors, or assign new functions to different parts of the enlarged area. This means that, in an open plan, there is a big room with different sections for different functions. On the other hand, a "room extension" means adding space to a certain room while decreasing the size of other units (usually a glazed balcony or dining room into another area) while holding one function in the extended room. The final category refers to traditional or modern renovation. Some people expressed no wish to add new signs to their houses but preferred to maintain their properties by painting, or by replacing design elements, such as tile flooring, doors, etc. For Traditional houses, renovation may also mean replacement of traditional materials with modern ones that are more durable, easier to find in the market, cheaper, or have lower construction costs. Examples are replacing adobe with concrete, straw-caliche wall plaster with cement wall plaster, stone tiles with ceramics or porcelain tiles, and wooden window frames with aluminium frames.

Table 9-12 shows different problems expressed by residents of different neighbourhoods. Traditional residents dealt with structural problems that emerged when renovating, whether by applying traditional (37 %) or modern (30 %) features. The Attached apartment, the oldest modern type, has two problems, one structural and the other aesthetic, as evidenced by the need for renovation (29 %) and traditional decoration (27 %). Residents of the Detached area dealt mostly with aesthetic issues, traditional (31 %) and modern (27 %) decoration; while residents of the

Elevator area were concerned with functional (extended room, 21 %) and aesthetic (modern decoration, 27 %) issues. Extensions are mostly done for the guest room. The spatial tendency of Damascenes to decorate their inner spaces is obvious. When the three types of modern houses were built, residents found that the plain walls of the inner spaces did not fit their ideal images. Some added decorative features to their residences and others expressed their desire for decorations. Traditional houses are commonly characterized by traditional decorative elements, which need renovation.

It is important to have a space in every house to accommodate guests for occasional social gatherings. Guest space is designated in every house regardless of the residential type and size. It is a space that signifies social status, just as an expensive car, or a nice dress will do. A large guest room with decorated walls and ceilings, and nicely fitted furniture becomes a sign of prestige. In addition, after enlargement and decoration, a guest room represents an actual representation of the *Ka'a*, found in Traditional houses.

This section has established that each neighbourhood has its own problems. Hence, the null hypothesis that there are no significant differences in the satisfaction with house features among residents living in different residential areas is rejected.

Neighbourhood Elements

Table 9-11 shows that inhabitants of Attached, Detached, and Elevator neighbourhoods desire to maintain the existing structure of modern neighbourhoods by 79, 69, and 69 percent. Correspondingly, a desire for traditional significance was less (50, 44, and 28 %). It decreased successively from Attached, Detached to Elevator neighbourhoods. Residents of Traditional neighbourhoods show an equal desire to maintain traditional identity (67 %) and provide modern significance (65 %).

Direct questions about how inhabitants of the four neighbourhoods wished to modify or improve their neighbourhoods, provided detailed information, as shown in Table 9-13. Inhabitants frequently referred to the need for more trees and parks, to maintain stony streets and asphalt streets, to have larger streets, pedestrian routes, stony facades, and fences, and to unify colours and appearance of facades. Desires for general renovation of urban elements also were expressed in some neighbourhoods. Finally, others related to convenience elements, such as improved cleanliness, light, quietness, and service.

Indications of desirability to change some neighbourhood elements is often a result of experienced inconvenience. For example, services such as a bakery, grocery store, rest area, bus stop, sport club, or public telephone, were desired since these make neighbourhood life more convenient and attractive to residents. Though such services as a sport club were never found in or close to any neighbourhood, some people expressed desire for one in their neighbourhood.

With respect to design features of different types of neighbourhoods, as indicated in Chapter 4, desired changes are classified into traditional (T) and modern (M) significance, as shown in Table 9-13.

Table 9-13: Percentages of inhabitants of each neighbourhood type who wished to modify, add, or maintain traditional (T) or modern (M) urban elements.

Ngbd Type	Tree	Park	Stone Asphalt	Large st	Side st		Stony facade	Colour	Renew	Renew	Clean	Quiet	Light	Service
	M	M	T	M	M	T	T	T	T	M				
Tradition	17	10	9	21	20	5	13	10	58	14	29	8	13	0
Attached	37	14	3	24	8	2	29	24	3	36	41	9	6	13
Detached	40	16	0	24	18	9	29	33	0	36	47	8	15	9
Elevator	33	20	0	14	16	4	19	34	1	15	30	7	11	16

For residents of Traditional areas, renovation was the most important urban change (58 %), followed by cleanliness (29 %). Similar percentages of participants expressed their wish to maintain asphalt streets and to enlarge some of the narrow streets (21 and 20 %). Similar percentages are evident by residents of both Attached and Detached areas, who expressed desire for urban changes regarding need for cleanliness (41, 47 %), renewal (36, 36 %), trees (37, 40 %), stony facades (29, 29 %), unification of colour or facades (24, 33 %), and finally, maintenance of street asphalt (24, 24 %). Residents of the Elevator neighbourhood expressed desire for urban changes related to cleanliness (30 %), colour-facade unity (34 %), and trees (33 %).

A moderate percentage of residents of the four neighbourhood types expressed desires to modify their urban sign elements. The practical base analysis shows that residents of Traditional neighbourhoods identify different main problems in their neighbourhood settings than do residents of Modern neighbourhoods. Residents of the three Modern neighbourhoods have similar problems; especially residents of Attached and Detached neighbourhoods. Changes in neighbourhoods also demonstrate the distinctly different problems for each neighbourhood, 1) some changes require money, time, and effort, such as renovation of Traditional neighbourhoods; 2) other problems related to continuous care of urban elements, such as cleaning and planting trees; and 3) other problems are complementary to the neighbourhood appearance, such as the colour of facades and stone veneer for fences. Therefore, the level of satisfaction differs in kind among residents of different neighbourhoods. One's dissatisfaction for not having enough trees in the neighbourhood is not like one's dissatisfaction with having blighted structures. So, the null hypothesis is rejected: there are significant differences of satisfaction with urban signs among residents of the four neighbourhood types.

9-7. SUMMARY

This chapter presents through verbal and practical evidence of the degrees of preference and satisfaction with urban elements and house features for inhabitants of Traditional, Attached, Detached, and Elevator neighbourhoods. Also, it examined characteristics of most preferred neighbourhoods. A number of hypotheses were discussed to determine the intersubjective decisions of residents who experience different living environments. A summary of the test results of these hypotheses is indicated in Table 9-14.

Table 9-14: Summary of results of different analyses of people's significant satisfaction with and preference for different urban signs.

Method description	House/Nghd Type			
	Traditional	Attached	Detached	Elevator
House Features				
feature satisfaction	0	1	1	1
house satisfaction	1	1	1	1
practical changes	0	0	0	0
Neighbourhood Element				
element satisfaction	0	1	1	1
Nghd satisfaction	1	1	0	1
resident preference	0	1	1	0
practical changes	0	1	1	1

0 = show significant difference from others
1 = show no significant difference from others

This table indicates "0" when residents of one neighbourhood type differ significantly in their appreciation of urban signs (house and neighbourhood) from residents living in other neighbourhood types, otherwise 1 is indicated. Residents of Traditional neighbourhoods have a total of 2 cases without significant differences from the three Modern

areas, that have 6, 5, and 5 cases without significant differences from each other. (For detailed analysis regarding the effect of social circumstances (Socio-demographic attributes) on inhabitants' preference of and satisfaction with house features and urban signs, see Appendix I)

Peoples' interaction with their built environment, as observed through their spatial tendency, reflects cultural and personal context, as modeled in Chapter 3. The different evaluations of built environments among residents living in different neighbourhoods are affected by four factors: 1) familiarity with the living environment; 2) amount of experience with other environments; 3) opportunity to change their housing; and 4) convenience of some features in one's domestic environment. Thus, moving form one residence to another requires effort, as uncertainty is produced when deciding to which residence to move and if the unfamiliar patterns of life in this new residence will be critical to theirs.

When people were asked of their preferences for their own house features and neighbourhood elements, they relied on direct experience with their living places. Generally, they had lived in the environment long enough to know what they liked (see Appendix D, Table D-1). Some elements are evaluated as convenient and highly preferred, such as spacious rooms, big windows, trees, nearby pharmacies, clinics, and schools. Other elements create uncomfortableness for occupants, such as small rooms, low ceilings, narrow streets, and cultural posters.

Lack of familiarity with features that exist in other neighbourhoods reduce the validity of the informants' responses. So, perception of positive and negative sides of built environments reflect only the delivered information from other individuals' ideal opinions, reputation of residential areas, and self observation (when visiting friends or relatives living there, or when walking through the neighbourhood). When

people therefore were asked to rank the five residential types (T, A, D, E, V) according to their preference, people preferred the Villa residence as the first choice, followed by the Detached residential type. Their information about the Villa type comes from seeing or visiting summer Villa houses located in the high hill villages, northwest of Damascus. Their image of villas is created by little experience and is conditioned by a vacation atmosphere. How, in reality, Villa residential neighbourhoods affect lifestyles of occupants is practically unknown. However, with the available information, it is their first choice.

Generally, the Detached residential type is experienced only by its inhabitants; however, it was selected by residents of Attached and Elevator areas who ranked their own type as the last choice. This also reflects what they see and hear about Detached areas. Detached housing is perceived as synonymous with a wealthy neighbourhood, clean streets, quiet, neat shops' facades, and the best schools. For these and other qualities not identified, the built environment is, in general, highly preferred.

Personal experience proves to be very influential on one's decisions. Residents of Traditional neighbourhoods who complained of extensive deterioration of their area still preferred it more than any other residence type; the Villa residence was their second choice and the Detached type remained third.

People's evaluation of their own residential areas shows their overall satisfaction, despite modifications made or needed to their areas. Thus, their dissatisfaction with some environmental elements has not yet caused them to hate their residence area enough to make the decision to move out. If the decision to move out is taken, they have to confront the uncertainty of new features. The arabic saying "the neighbour before the house" meaning before you examine the condition of your house, seek a good

neighbour that cares for others. Vandalism within residential areas, dirty streets, and lack of trees are blamed on neighbours. This is why social reasons, i.e., "bad neighbours," are the most powerful reasons for leaving one's neighbourhood. The decision to select a new neighbourhood or to stay in a current residence is a complex decision-making behaviour because it is affected by what culturally and personally is known and considered acceptable.

It has been useful to consider criteria that residents consider in forming their preferences and satisfaction/dissatisfaction with domestic environment. Experience with pragmatically development creates part of the (connective or denotive) meanings of urban signs. Thus, the semantic meanings of urban signs, which are discussed in the following chapter, are inevitably related to pragmatic meanings.

PART IV. MEANINGS OF URBAN SIGNS

Semantics refers to the study of meanings attached to a word (in verbal communication) or to an object (in non-verbal communication). The meanings of an object, an event, or a behaviour are interpreted by persons in context with other objects, events or persons that occupy an urban setting. However, some semioticists, such as Jack Solomon, claim that semantics deals only with verbal expression while semiotics deals with non-verbal expression (Solomon, 1988). In this research, verbal and nonverbal evidence are considered as part of the semiotic motive used by urbanites. This divides semiotics into three components: syntactics, pragmatics, and semantics. Part II of this study dealt with syntactic analysis, Part III dealt with pragmatic content, while this part, Chapter 10, focuses on semantic analysis.

CHAPTER 10. SEMANTIC ANALYSIS

10-1. Introduction

Values people hold are reflected signitively and symbolically through architecture at house and neighbourhood levels. In the case with the water fountain, shape did not come by chance or through an architect's personal idea. Indeed, according to Hassan Fat'hi, a universally well-known Egyptian architect, the shape of the water fountain was selected deliberately to represent certain attributes for their symbolic values. For Arabic persons the circular shape is the domain in which earthly things exist. It expresses their image of the universe. Use of both symbols and architectural elements are consistent in the meaning of the house as a micro-cosmos. The four walls surround the inner courtyard to symbolize four pillars that support the sky dome. Sasanic domes symbolize the sky and are incorporated into house design. The sky dome reflects heaven into the centre of the house, and make its holiness penetrate inside. Alarabi constructed water fountains to look like the Sasanic Dome, but in an upside down form to reflect the real sky on the water surface. In this way he symbolized the sky and universe in the house. (Fat'hi, 1982)

This chapter will look at meanings associated already with existing house features and urban elements in each of the four residential neighbourhoods: Traditional, Attached, Detached, and Elevator houses/neighbourhoods.

Meanings of signs can be: 1) activity functions (uses) or 2) communicative functions (symbols, icon, or index). People's observation (or awareness) of house and urban features as signs in their neighbourhoods is the first step in interpretation. Chapter 8 identifies the observed signs of all neighbourhoods. This chapter identifies activity and communication functions of house and urban signs. To do so, each house and urban sign is defined with reference to functional and communication meanings through a pilot study (as discussed in Chapter 7). Based on that procedure, the required data were obtained from inhabitants in the selected neighbourhoods through the questionnaire, presented in Appendix C, Part Three, can be summarized as follows:

1. Each identified house feature and neighbourhood element was written (in Arabic) on a separate card, forming two sets of cards, respectively.
2. Each card was given a reference ID number. The number of cards in the house set ranged from 1 to 21; while cards of the neighbourhood set numbered from 1 to 33.

3. People were asked to select five cards (signs) from each set that they would like to talk about.

4. The first set of the five selected cards were presented to the participant. Assuming the order of the selected cards reflected the most- to the least-preferred features and elements, the selected cards are presented to participants in that order of selection, right to left. The investigator read a series of meanings appropriate to all features or elements (one at a time) and the participant was asked to point to the card(s) that expressed the recited meaning (see questionnaire, Appendix C, Part Three). The same step was repeated for the second five selected cards related to neighbourhood elements.

The goal of this chapter is threefold: 1) to discuss the outcomes of particular selection of cards (signs) from the most-to the least-preferred signs, 2) to discuss the findings about functional and symbolic meanings of house and neighbourhood signs, and 3) to compare the results of 1 and 2 among the four sample neighbourhoods.

10-2. Most-Preferred Signs

As mentioned previously, the order of selection of the five cards by every participant is presumed to reflect his/her most-to least-preferred cards/signs to talk about. The participant may even say when selecting the fifth card that "there are no more cards I want to talk about". The analytic method used for the collected data is "The Sum of the Weighted Values" (see Appendix E). The results are graphed in Figures 10-1 and 10-2 for all neighbourhoods. The other presented Figures used David Lowenthal's semantic differential method on Environmental Structures: Semantic and Experiential Components. 1972, no. 5.

Figure 10-1,2 indicates differences in the levels of preference for house features and neighbourhood elements that residents selected to talk about in all neighbourhoods. Some house features are highly preferred by all inhabitants, such as: living room, bedroom, and kitchen; and such neighbourhood elements as: mosque, and schools; while there are other signs with low preference exemplified by such house features as: corridor, lattice window, and fountain, and such neighbourhood elements as: covered street, arch, and museum. The question is how similar are the orderings of features among the residents of the different neighbourhoods? The summed weighted values of all house and neighbourhood types are plotted for paired comparisons as shown in Figures 10-3,..,14.

Figure 10-1: Scaled house features according to the sum of weighted values of the level of preference talked about by residents.

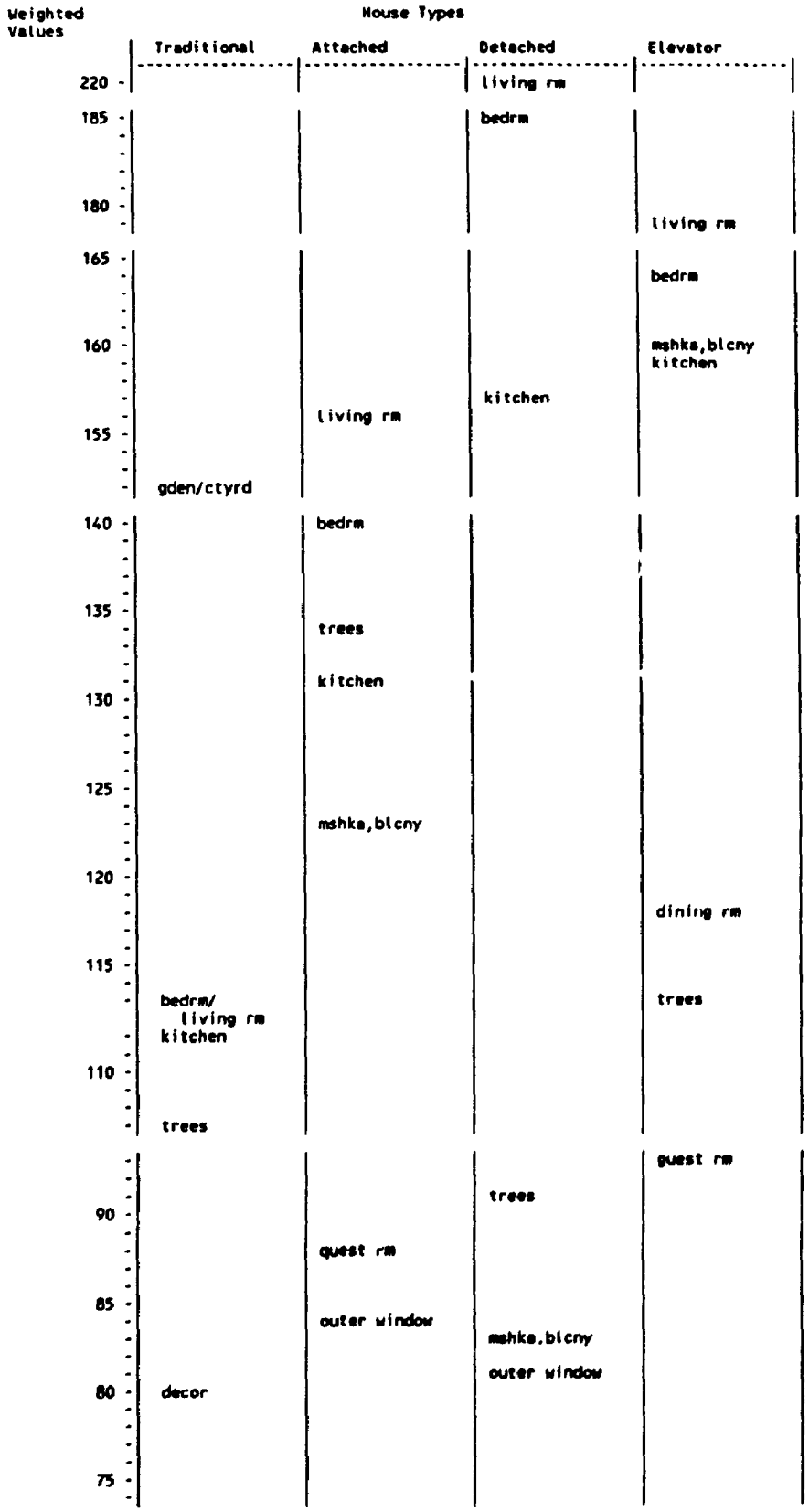


Figure 10-1: (continue)

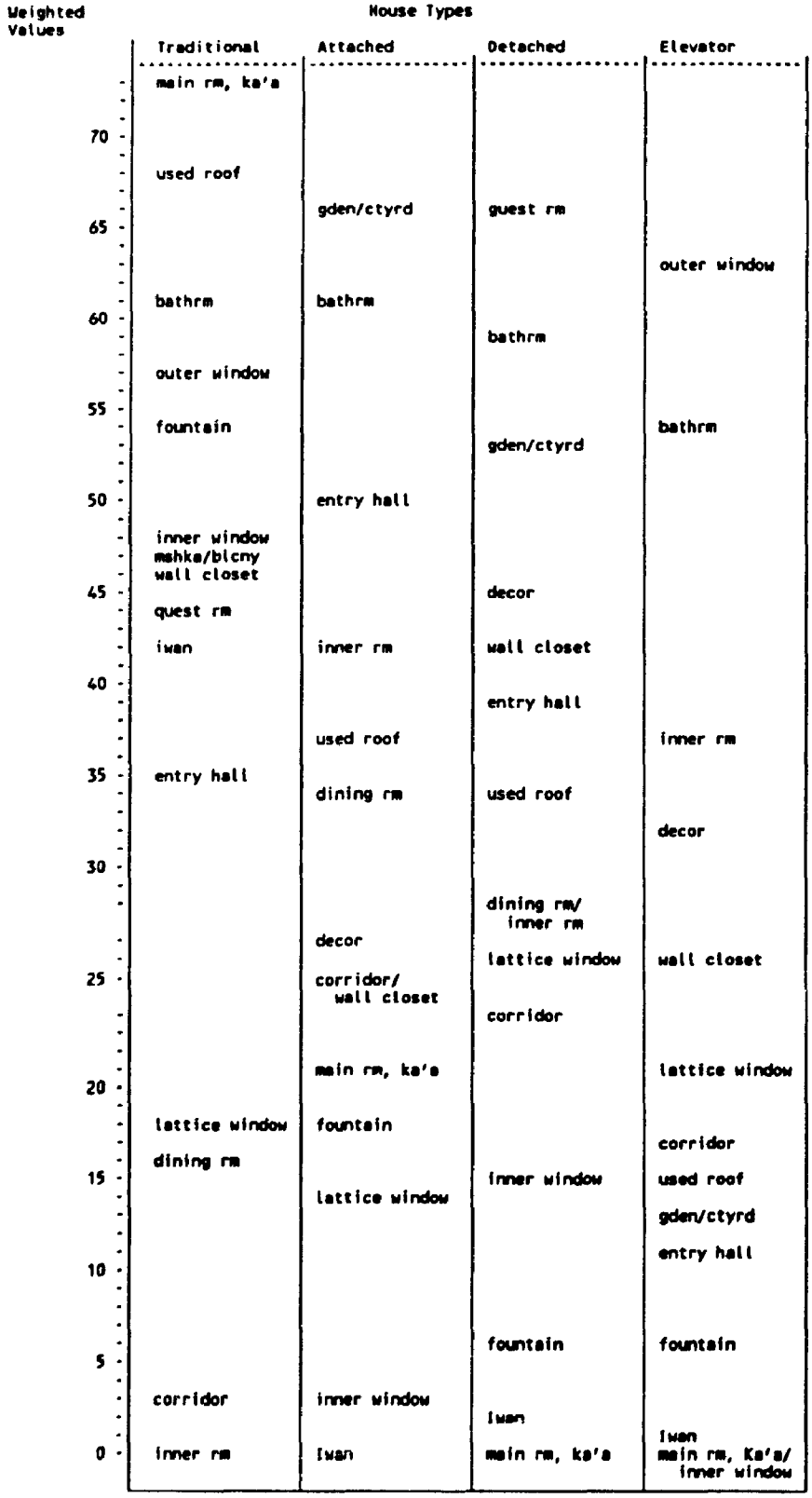


Figure 10-2: Scaled neighbourhood elements according to the sum of weighted values of the levels of preference talked about by residents.

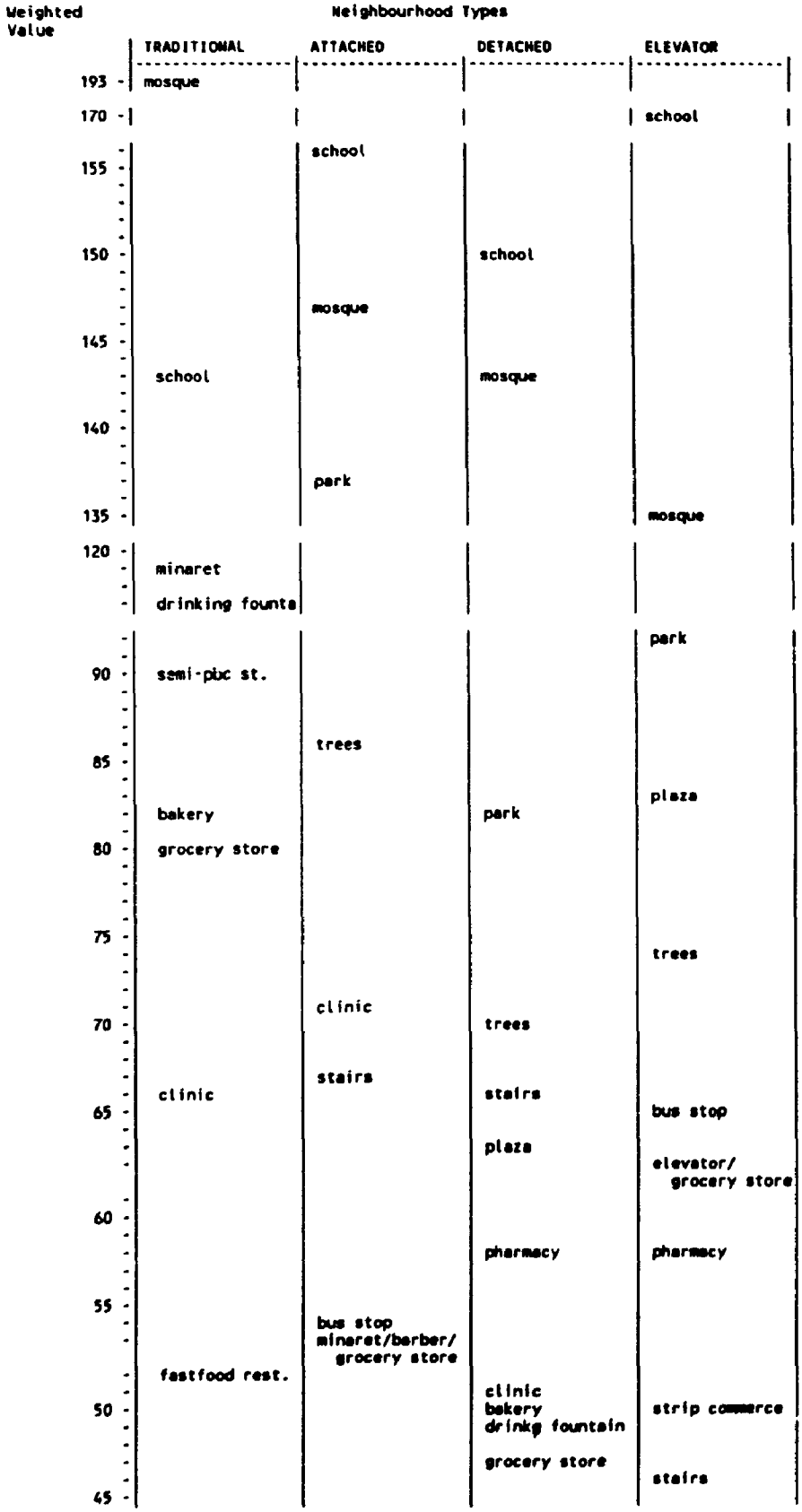
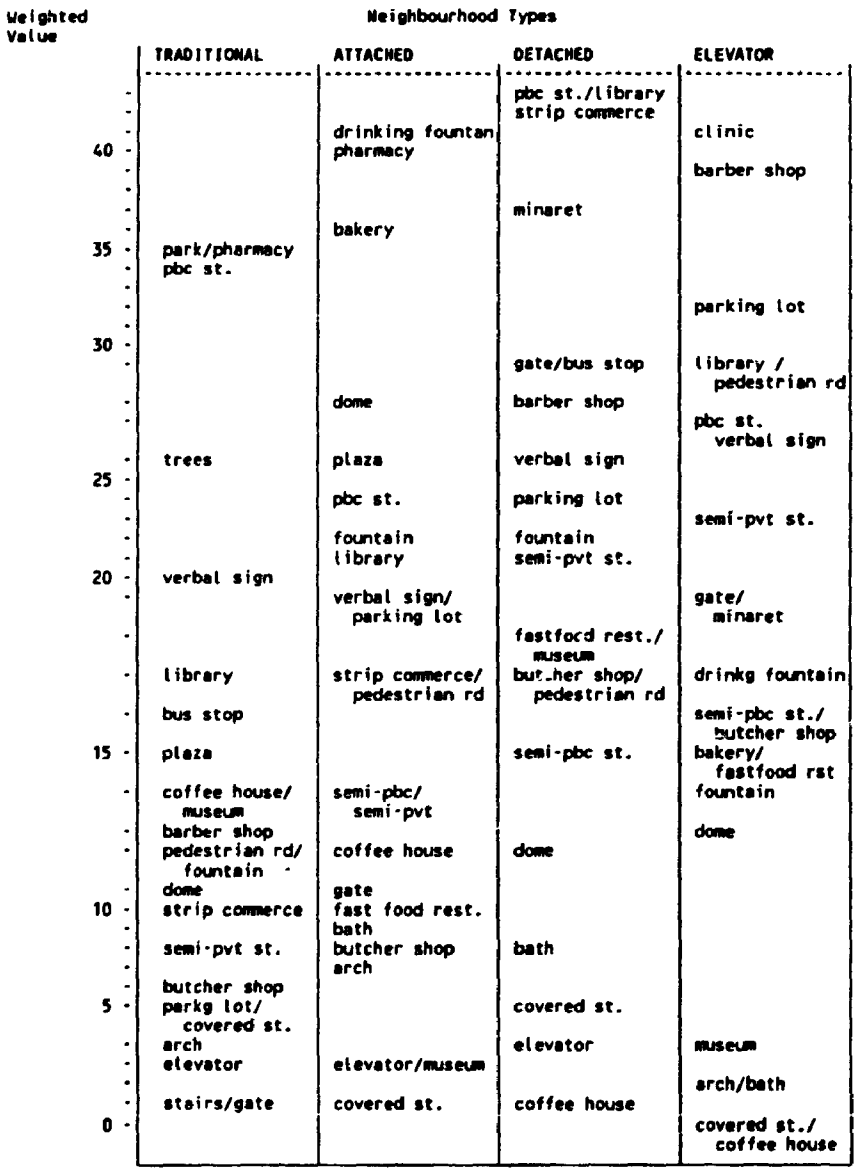


Figure 10-2 (continue)



House Features

House features are depicted in the first six illustrations (Figures 10-3 to 10-8). Inspection of the graphs shows that the Traditional house compared to Modern apartment types is weakly correlated. The number of features fall within a "cone of strong resemblance"[1] (dashed lines) are 10, 13, and 8 respectively for Attached, Detached, and Elevator areas. Features located outside the dashed lines are either close to the Traditional area or to the Attached, Detached, and Elevator areas, an indication of higher preferences for such features talked about by residents living in the area. Tables 10-1 and 10-2 summarize these results.

Table 10-1: Features with higher preferences for residents of Traditional houses than for residents of Attached (A), Detached (D), and Elevator (E) apartments.

Table 10-2: Features with higher preferences for residents living in Attached, Detached, and Elevator apartments than for residents of Traditional houses.

Table 10-1

Feature	A	D	E
garden/ctyrd	X	X	X
main rm, *Ka'a*	X	X	X
fountain	X	X	X
inner window	X	X	X
iwan	X	X	X
decor	X	X	
used roof		X	X
entrance			X
Total	6	7	7

Table 10-2

Feature	A	D	E
inner rm	X	X	X
corridor	X	X	X
dining rm	X		X
blcy/*mshk*	X		X
guest rm	X		X
Total	5	2	5

[1] The "cone of strong resemblance", drown by David Lowenthal (1972), is the area on the axis (X and Y) confined by two lines drown from the crossing points to the centres of both sides facing X and Y (see Figures 10-3).

Figures 10-3 to 10-8: Paired comparison by levels of preference for all house features that residents talked about.

Dashed Lines — form a cone of strong resemblance.

Circle — highlight a cluster of high (correlation) observation of house features

Legend:

grdn	garden/courtyard
bdrm	bedroom
lvg	living room
ktn	kitchen
tree	trees/plants
dcr	decor
kaa	main room / *Ka'a*
rf	flat roof
bth	bathroom
otwd	outer windows
fntn	fountain
inwd	inner window
blcy	*mashraka*/balcony
clst	wall closet
gst	guest room
iwan	*iwan*
etrc	entry hall
ltc	lattice window
dng	dining room
crdr	corridor
inrm	inner room

Figure 10-3

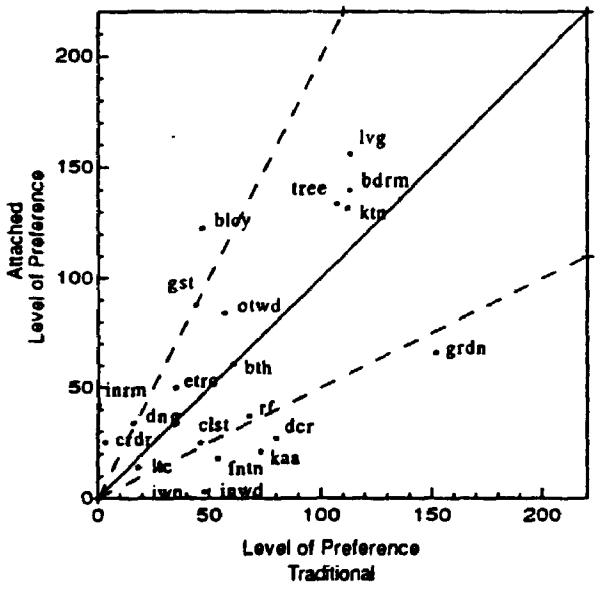


Figure 10-4

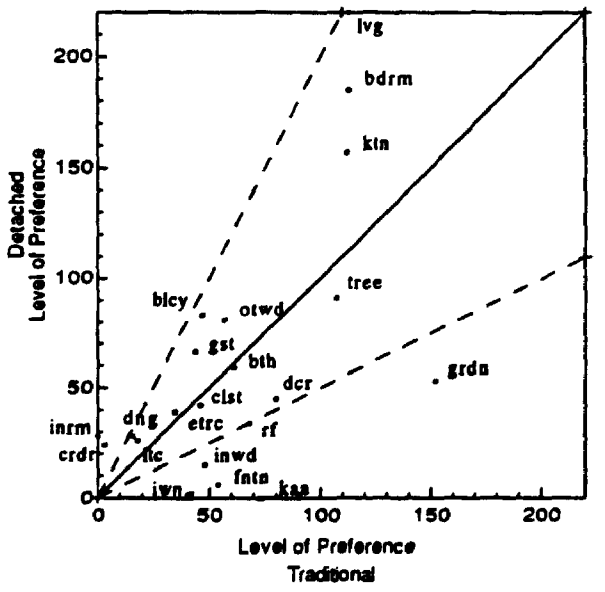


Figure 10-5

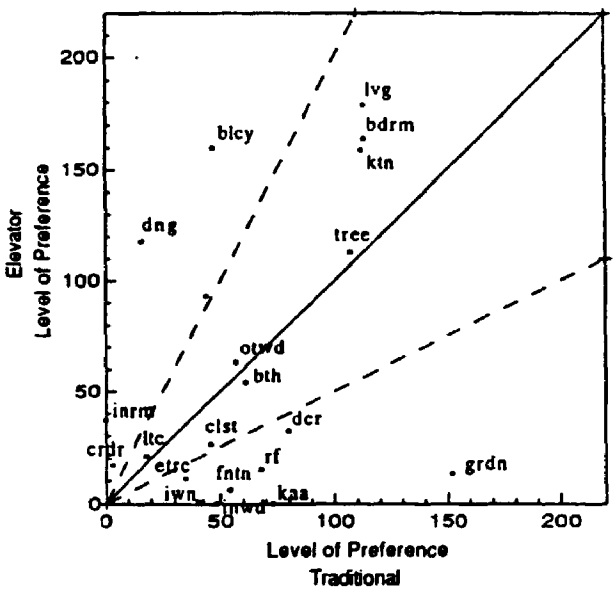


Figure 10-6

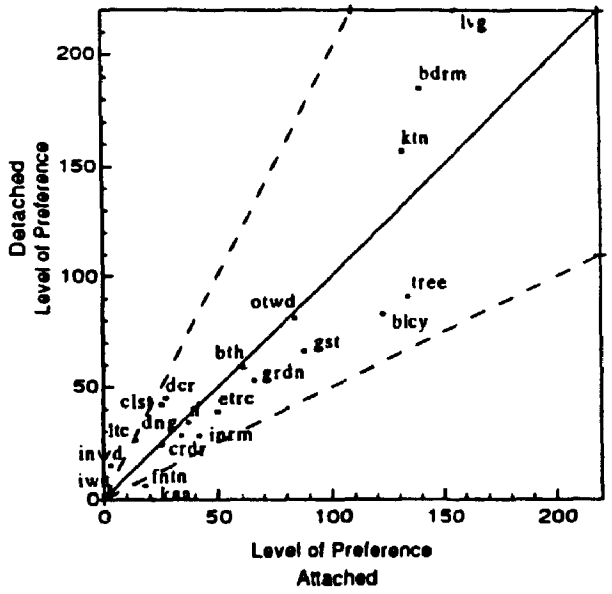


Figure 10-7

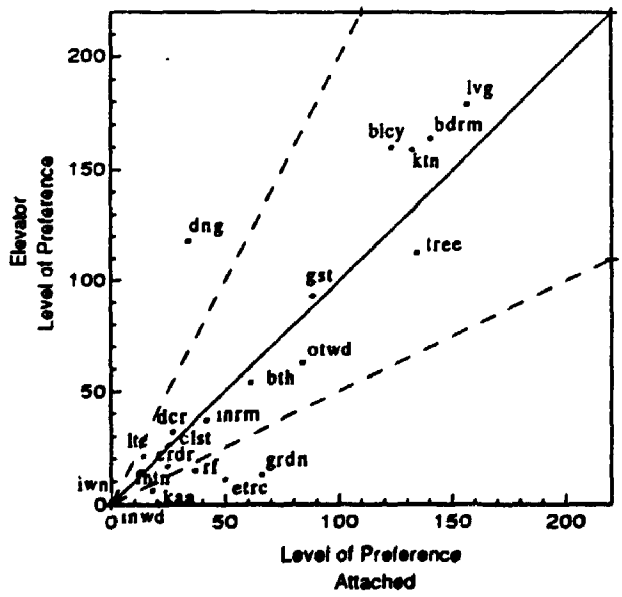
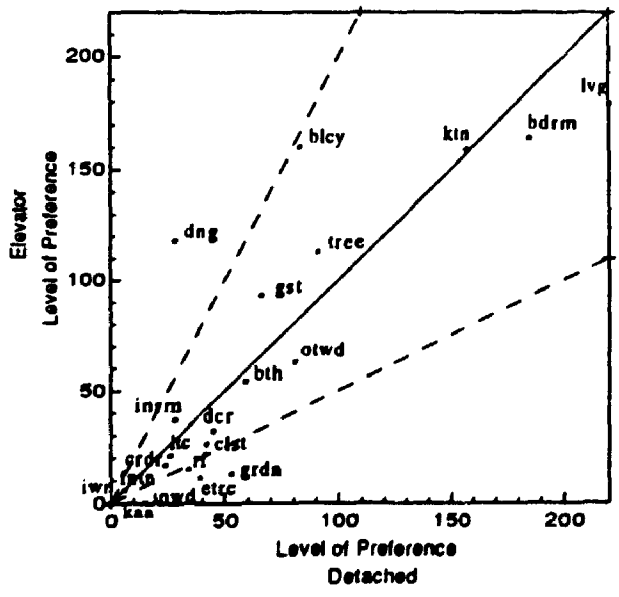


Figure 10-8



Figures 10-9 to 10-14: Pair comparison by levels of preference for all neighbourhood elements that residents talked about.

Dashed Lines	form a cone of strong resemblance
Circle	highlight a cluster of high (correlation) observation of urban elements

Legend:

msq	mosque
schl	school
mnrt	minaret
drkg	drinking fountain
spbc	semi-public st
bkry	bakery
gstr	grocery store
clnc	clinic
fstfd	fast-food restaurant
prk	park
phcy	pharmacy
pbc	public street
bth	public bath
tree	trees/plant
sgn	verbal sign
lbry	library
stp	bus stop
c.com	plaza
cfhs	coffee house
msm	museum
brbr	barber shop
pdn	pedestrian road
fntn	fountain
dm	dome
s.com	strip commercial
spvt	semi-private st
btr	butcher shop
pklt	parking lot
cvd	covered street
arch	arch
elv	elevator
str	stairs
gat	gate/fence

Figure 10-9

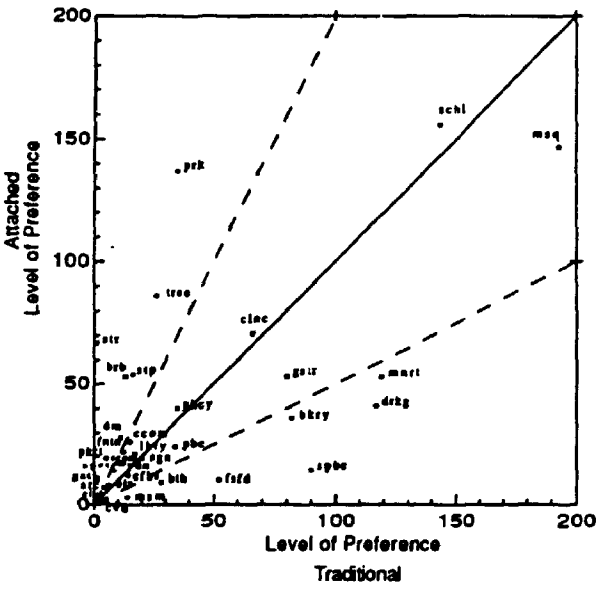


Figure 10-10

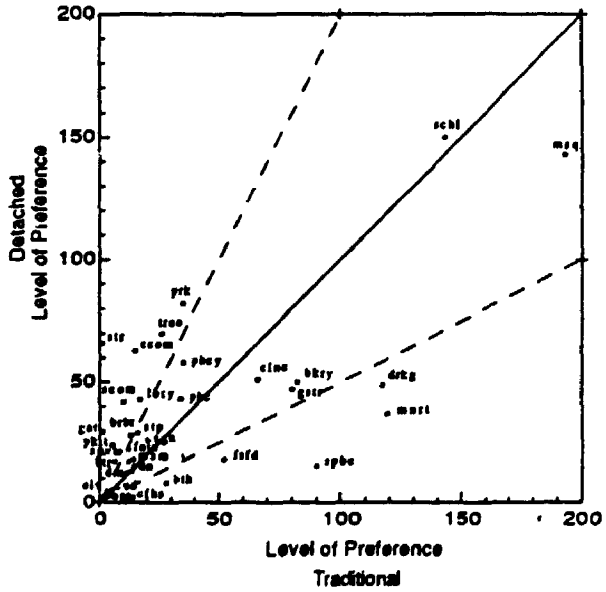


Figure 10-11

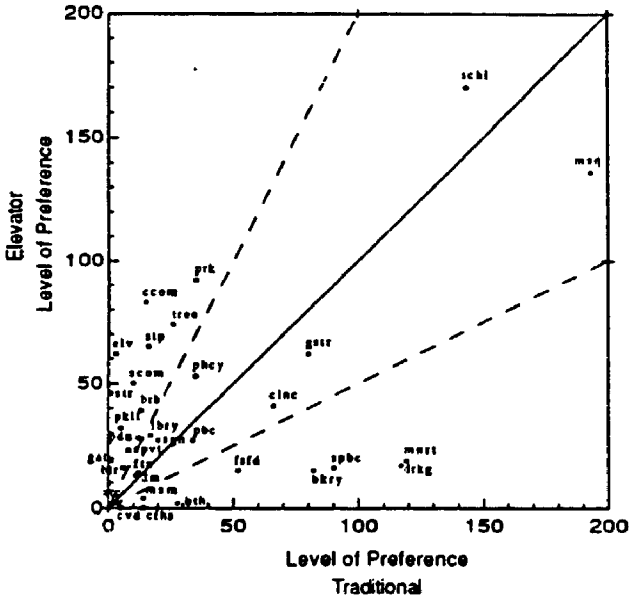


Figure 10-12

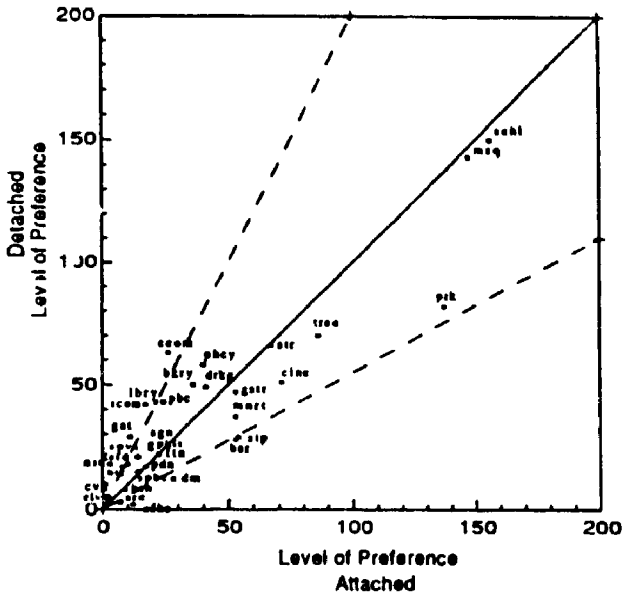


Figure 10-13

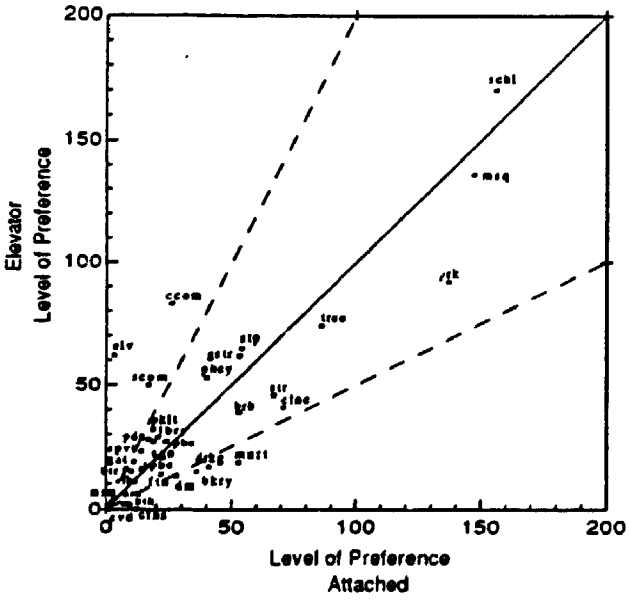


Figure 10-14

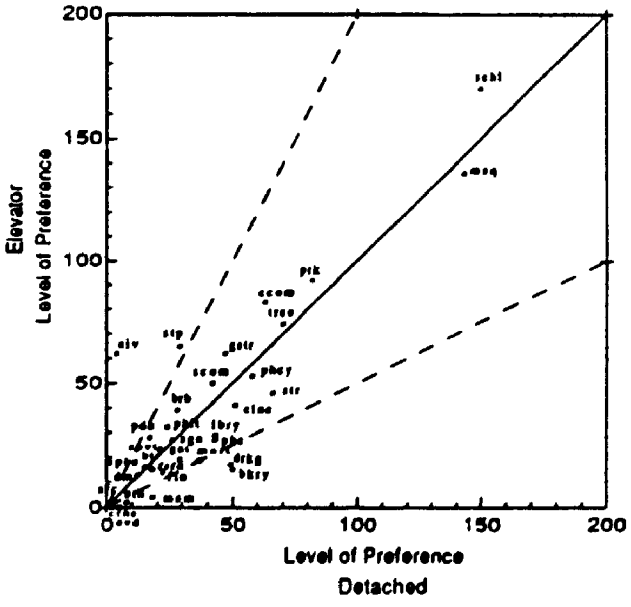


Table 10-1 shows six to seven out of eight features have higher degrees of preference by residents of Traditional houses than residents of Attached, Detached, and Elevator apartments. Six features (courtyard, *Ka'a*, fountain, inner window, *iwan*, and decor) are common to Traditional houses. Residents of both Attached and Detached apartments have less preference for decor than residents of Traditional houses and Elevator apartments. The high preference for decor by residents of Elevator apartments can be attributed to increased application of decor, and to frequent interaction with it. Such focused interaction with house features may resulted from isolation from ordinary street life and their sense of community. If so, residents substitute decor for missing environmental features. The "Discussion" section of this chapter and Appendix M elaborate on reasons that underlie divergences of preferences for house features by residents of all house types.

The Attached-Detached pair, Figure 10-6, show a high degree of correlation. There are two features, fountain and main room (*Ka'a*) that tend toward the Attached area. In Figures 10-7 and 10-8, the Elevator apartments also show correlation with Attached and Detached apartments, but with a few non-correlated features. The dining room tends toward the Elevator type, an indication of its importance for residents of the Elevator apartments. In the case of the Attached-Elevator pair, Figure 10-7, a few features show considerable divergence, or are outside the dashed lines; these features are: garden, entrance, used roof, fountain, and *Ka'a*; Similarly, in case of the Detached-Elevator pair, Figure 10-8, there are three considerably different features: garden, entrance, and used roof.

From this section it is found that residents of Traditional houses have significant differences in their preference for house features from residents of all Modern apartment types, who show no significant differences among each other.

Neighbourhood

Figures 10-9,...,14 relate to neighbourhood elements. These figures show similar results to those of house features. Graphic inspection indicates that comparisons of Traditional houses with any other Modern types shown a scattered patterns, or weak correlation. The number of features lying within a cone of strong resemblance (inside dashed lines) are 18, 16, and 12 (out of 33) for Attached, Detached, and Elevator areas. Similarity in numbers of preferred elements decrease as one moves toward the Elevator neighbourhood, the newest residential area. Elements located outside the dashed, are those with considerable divergence toward the Traditional, Attached, Detached, and Elevator areas, an indication that they are preferred to be spoken of by residents living in the area. Tables 10-3,4 summarize these results.

Table 10-3 shows five highly preferred features that are common to Traditional houses selected by residents, contrary to residents of Attached, Detached, and/or Elevator apartments. These features are: minaret, drinking fountain, semi-public street, fastfood restaurant, and public bath.

Table 10-4 shows six elements highly preferred by residents of Attached, Detached, and Elevator neighbourhoods. These elements are: parks, trees, stairs, the barber shop, parking lot, and gate/fence. Why do such differences in preference among residents of neighbourhoods occur? For example, in Modern neighbourhoods, the barber shop is an important element for residents of the Traditional neighbourhoods, but having a moderate degree of preference can be attributed to the competition with other urban elements found in the Traditional neighbourhoods such as minarets, drinking fountains, semi-public streets, bakeries, and fastfood restaurants. This competition caused barber shops to fall short in the selection. ("The Discussion" section of this chapter and Appendix N provide more details for other elements).

Table 10-3: Elements highly preferred by residents of the Traditional neighbourhood, but showing low preference by residents of Attached (A), Detached (D), and Elevator (E) neighbourhoods.

Table 10-4: Elements highly preferred by residents of Attached, Detached, and Elevator neighbourhoods, but showing low preference by residents of the Traditional neighbourhood.

Table 10-3

Element	A	D	E
minaret	X	X	X
drinkg fountain	X	X	X
semi-pbc st.	X	X	X
fastfood rest.	X	X	X
pbc bath	X	X	X
bakery	X		X
museum	X		X
coffee house		X	X
Total	7	6	8

Table 10-4

Element	A	D	E
park	X	X	X
trees	X	X	X
stairs	X	X	X
barber shop	X	X	X
parking lot	X	X	X
gate/fence	X	X	X
plaza		X	X
strip commerce		X	X
butcher		X	X
semi-pvt st.		X	X
bus stop	X		X
pedestrian rd			X
dome	X		
library		X	
elevator			X
Total	8	11	13

Figures 10-12,13 show the Attached neighbourhood has a correlation with Detached and Elevator neighbourhoods, with few exceptions. In Figure 10-13, there are three elements (central commercial, strip commercial, elevator) which tend towards the Elevator neighbourhood, indicating their importance for those residents; while four elements (minaret, drinking fountain, bakery, and public bath) tend towards the Attached neighbourhood. Figure 10-12 show 25 elements correlated around the diagonal and only nine elements are located outside the dashed lines, five of which tend towards the Detached neighbourhood (central commercial, strip commercial, library, gate, and museum), and four elements (barber shop, bus stop, dome and coffee house) tend towards the Attached neighbourhood. The Detached-Elevator pair, Figure 10-14, shows a high degree of correlation, or cluster of features around a diagonal (a matched level of meaning for each pair). Two elements (elevator and bus stop) showed a tendency toward the Elevator neighbourhood, and three elements (drinking fountain, bakery, and museum) show a tendency toward the Detached neighbourhood.

From this evidence it can be concluded that Traditional residents have expressed significant differences in their preferences for neighbourhood elements from residents living in the three Modern apartment types who show no significant differences among each other.

10-3. RELATIVITY OF SELECTION

The sum of the weighted values of preferred signs can be presumed to be relative to each type of residential area. In this case, comparison of results of all neighbourhoods are primarily related to assorted house features and neighbourhood elements, in accordance with the sum of the weighted values. This assumption can be supported by the fact that if the first selection of the house feature list and neighbourhood element list are put aside, then residents have their second selection as the first. The same argument can be repeated when eliminating the second selection and the third, and so on until a few features/elements are left to select from. Figure 10-1 and 10-2 above can be re-drawn after eliminating the weighted value scale, as shown in Tables 10-5 and 10-6.

Table 10-5: Ranked house features from most to least preferred for all participants. (*) = Features have same rank.

Rank	TRADITIONAL	ATTACHED	DETACHED	ELEVATOR
1 -	gden/ctyrd	living rm	living rm	living rm
2 -	bed rm	bed rm	bed rm	bed rm
3 -	living rm	trees	kitchen	mshka/blcny
4 -	kitchen	kitchen	trees	kitchen
5 -	trees	mshka/blcny	mshka/blcny	dining rm
6 -	decor	quest rm	outer window	trees
7 -	main rm, ka'a	outer window	quest rm	quest rm
8 -	used roof	gden/ctyrd	bath rm	outer window
9 -	bath rm	bath rm	gden/ctyrd	bath rm
10 -	outer window	entrance	decor	inner rm
11 -	fountain	inner rm	wall closet	decor
12 -	inner window	used roof	entrance	wall closet
13 -	mshka/blcny	dining rm	used roof	lattice
14 -	wall closet	decor	dining rm *	corridor
			inner rm *	
15 -	quest rm	corridor *	lattice	used roof
		wall closet *		
16 -	iwan	main rm, ka'a	lattice	gden/ctyrd
17 -	entrance	fountain	corridor	entrance
18 -	lattice	lattice	inner window	fountain
19 -	dining room	lattice	fountain	iwan *
				main rm,ka'a *
				inn window *
20 -	corridor *	inner window *	iwan *	
	inner room *	iwan *	main rm,ka'a *	

Table 10-6: Ranked neighbourhood elements from most to least preferred for all participants. (*) = elements have same rank.

Rank	Tradition	Attached	Detached	Elevator
1 -	mosque	school	school	school
2 -	school	mosque	mosque	mosque
3 -	minaret	park	park	park
4 -	drinkg fountai	trees	trees	plaza
5 -	semi-pbc st.	clinic	stairs	trees
6 -	bakery	stairs	plaza	bus stop
7 -	corner store	bus stop	pharmacy	elevator *
				corner store *
8 -	clinic	minaret *	clinic	pharmacy
		barber shop *		
		corner store *		
9 -	fastfood rst	drinkg fountai	bakery	strip commerce
10 -	park *	pharmacy	drinkg fountai	stairs
	pharmacy *			
11 -	pbc st.	bakery	corner store	clinic
12 -	bath	dome	pbc st. *	barber shop
			library *	
13 -	trees	dome	strip commerce	parking lot
14 -	verbal sign	plaza	minaret	library
15 -	library	pbc st.	door/fence *	pedestrian rd
			bus stop *	
16 -	bus stop	fountain	barber shop	pbc st. *
				verbal sign *
17 -	plaza	library	verbal sign	semi-pvt st.
18 -	coffee house *	verbal sign *	parking lot	door/fence
	museum *	parking lot *		
19 -	barber shop	strip commerce	fountain	minaret
20 -	pedestrian rd*	pedestrian rd	semi-pvt st.	drinkg fountn*
	fountain *			semi-pbc st. *
21 -	dome	semi-pvt st. *	fastfood rst *	butcher shop
		semi-pbc st. *	museum *	
22 -	strip commerce	coffee house	butcher shop	bakery *
				fastfood rst *
23 -	semi-pvt st.	door/fence	pedestrian rd	fountain
24 -	butcher shop	fastfood rst	semi-pbc st.	dome
25 -	parking lot *	bath	dome	museum *
	covered st. *			arch , bath *
				covered st. *
				coffee house *
26 -	arch	butcher shop	bath	
17 -	elevator *	arch	covered st. *	
	stairs *		elevator *	
	door/fence *		arch *	
			coffee house *	
28 -		elevator *		
		museum *		
		covered st. *		

Tables 10-5 and 10-6 simplify results of the most-to least-preferred features/elements discussed by people. Elaboration of results is inseparable from meanings that inhabitants associate with signs. The discussion, therefore, will continue after the analyses of meanings of house and urban signs.

10-4. MEANINGS OF OBSERVED SIGNS

The five selected house features (of 21 house features written on separate cards) were put in front of participants in addition to the card that carried the word "house". The word "house" was always presented with the five selected house features. While the interviewer was reciting (one at a time) a number of meanings related to house features, the participant was asked to point to the card(s) that best expressed the recited meaning. The meanings in order of recited presentation are: family gathering, place to study, a place to eat food (hunger), a place for ceremony(ies), heaven, childhood memory, past activities, people, religious principles, social values, feeling of control, feeling of possession, feeling of security, feeling of privacy, feeling of responsibility, outside noise (coming from the neighbour or street).

For neighbourhood elements (Card Set Two), the same steps were repeated for informants five selected elements accompanied by a card bearing the word "neighbourhood". The recited list of meanings, longer than the list of the house features, is relevant to neighbourhood life. The meanings in order of recited presentation are: stimulate me to drink, school students, hunger, ceremony, heaven, childhood memory, some past activities, time, God, religious obligation, a place to relax, a place to obtain information, a place for gossip, a place to gain knowledge, impaired breathing (cigarette), a polluted place, a crowded place, a noisy place, a place to meet people for enjoyment, a place that symbolizes tradition, a landmark, a place for bad people, a place for the youth, a place for adults, a place for spending money, a piece of art, tidy and clean, untidy and dirty, and noise of solicitors. These meanings can be grouped into four sets that categorize meanings people gave to signs.

1. spiritual image: God, religion, and Heaven
2. physical appearance: past , time, landmark, symbol, piece of art, tidy, and untidy

3. function: drink, eat, relaxation, information, knowledge, smoke, and spend money
4. interaction: childhood, meeting, gossip, pollution, noise, solicitors cries, adult, youth, and bad people

Since the number of participants selecting signs to talk about varies, the frequency values are converted into percentages (see detailed sample in Appendix K). If most participants associate the same meaning for a sign, the percentage will be close to 100, as an indication of the strength of this meaning. When only a few people associate a meaning with a sign, a low percentage indicates its weak relation to the sign.

It is assumed that interaction between inhabitants and their built environment is relative to the urban setting; thus, the degree of association of meanings with signs should reflect such relativity. Also, since semantic analysis deals with relative values, it is not important to detect small differences of associated meanings with signs. It is sufficient to know which meaning(s) have high or low sign association by inhabitants. Thus, four categories of different degrees of association are arbitrary divided.

The first category has an extremely low degree of association that ranges from 0 to the (common value - 1). The Median Polish method, introduced by Hoaglin and Velleman (1981), used the common value (or median median value) to interpret the smoothed frequency values in a two-way table. Common value is applied here as a useful tool to determine the extremely low percentage of the presented meanings in the two-way tables indicated in Appendix K. The common value can be calculated by taking the median of all rows and then taking the median of all medians.

Percentages range from the common value to 100 are divided into three equal levels. The first level that starts from the common value and

has low values, forms the second category. The second level that has moderately presented values, forms the third category. Finally, the third level that includes high values, forms the fourth category. Each category is symbolized as follows:

first category	"."	extremely low association
second category	"L"	Low association
third category	"M"	Moderate association
fourth category	"H"	High association

(see Appendix L for details). Figures 10-15,...,22 are constructed to show the house features according to the four categories. These Tables indicate three different kinds of significance:

1) strength of meanings associated with every design feature/ element,
2) number of meanings strongly attributed to every design feature/ element,
3) frequency of associated meanings with all design feature/element.

10-5. Comparison of Strength (Number) of Meanings

Diagrams depicting number of highly (H) and moderately (M) associated meanings with each house feature and neighbourhood element provide a graphic mode of summary comparison among the four house types (Figures 10-23,..,26). The polygraphs showing similarity in the number of meanings formed Figures 10-23 and 10-25, and the polygraphs that show dramatic differences among houses or neighbourhoods form Figures 10-24 and 10-26. Each residential type is presented by a particular direction. While direction differentiated one residential type, it has no interpretive significance. Distance from the midpoint represents the number of strongly associated meanings.

Figure 10-15: Degrees of associated meanings with Traditional house features.

House Features	privacy	gathering	study	hunger	ceremony	heaven	childhood	past	people	religion	social values	control	possession	security	responsibility	noise	Total of H & M
	Associated Meanings																
house	H	M	L	L	M	L	L	L	L	M	M	M	M	H	H	.	
decor	L	.	.	.	.	M	.	.	.	H	.	.	L	.	.	.	2
wall closet	M	.	M	L	.	L	H	M	L	M	L	.	L	L	.	.	5
inner window	L	H	M	.	L	L	H	M	M	L	M	.	.	M	.	.	7
outer window	L	.	L	.	L	.	M	.	L	.	.	L	.	.	.	M	2
lattice window	H	.	.	.	.	.	L	L	L	.	.	.	.	H	.	.	2
entry hall	M	L	L	.	.	.	L	.	.	.	.	M	L	.	.	.	2
guest rm	L	.	L	.	H	.	L	M	H	.	H	L	L	.	L	.	4
corridor	L	.	.	.	.	.	L	.	.	.	.	M	L	L	.	.	1
inner rm	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
kitchen	M	L	.	H	L	.	.	.	L	L	.	L	L	L	H	.	3
dinning rm	.	H	L	L	.	.	.	.	.	.	.	.	.	.	H	.	2
bedrm	H	.	M	.	.	L	L	.	M	M	.	L	H	H	L	.	6
living rm	M	H	H	L	L	.	L	L	H	M	L	.	.	L	L	.	5
main rm, *Ka'a*	L	M	.	.	L	.	.	.	M	.	L	L	.	.	.	.	2
bathrm	H	L	L	.	M	M	M	L	M	L	L	L	L	M	.	.	6
fountn	.	L	.	.	.	H	M	M	L	M	.	.	.	.	.	.	4
trees and plants	L	L	M	L	L	H	L	M	M	L	.	.	L	L	L	.	4
garden/ctyrd	L	H	H	.	H	H	H	M	M	L	H	.	L	L	L	.	8
iwan	.	H	M	.	M	.	L	.	M	.	.	.	.	.	.	.	4
mshka/blcny	M	H	H	L	.	L	H	.	L	.	M	L	.	.	.	L	5
flat roof	L	M	H	.	L	L	H	L	L	L	.	.	.	.	.	L	3

Where,

"." extremely low association "L" Low association
"M" Moderate association "H" High association

Figure 10-16: Degrees of associated meanings with Attached house features.

	privacy	gathering	study	hunger	ceremony	heaven	childhood	past	people	religion	social values	control	possession	security	responsibility	noise	Total of H & M
	Associated Meanings																
	M	M	L	.	L	.	.	.	L	L	L	L	M	H	H	L	
	L	L	.	L	.	M	L	L	.	L	L	.	.	.	.	.	1
	.	.	H	.	L	.	H	M	M	.	.	.	H	.	.	.	5
	.	.	L	.	.	.	L	.	.	.	.	.	.	.	.	L	0
	.	.	L	.	.	.	H	L	M	.	L	.	.	.	.	M	3
	H	.	L	.	.	.	L	.	.	M	.	M	.	M	.	.	4
	.	L	.	L	L	.	.	.	L	.	L	L	.	L	.	.	0
	.	L	L	.	H	.	L	L	H	.	H	.	.	.	M	L	4
	M	.	.	.	.	.	.	.	.	.	.	H	.	.	.	.	2
	M	M	L	L	H	.	L	L	M	M	H	L	M	L	L	L	7
	L	L	.	H	L	.	.	L	L	.	.	L	L	.	H	L	2
	M	H	M	H	M	.	L	.	.	.	L	M	M	M	L	L	8
	H	.	H	.	L	.	L	L	M	M	.	M	H	H	.	L	7
	M	H	L	L	L	.	L	L	.	L	M	.	.	L	L	L	3
	.	.	.	.	M	.	L	M	M	L	M	.	.	.	.	.	4
	M	.	.	.	.	.	L	.	.	M	.	L	.	L	.	.	2
	.	M	L	L	L	L	M	L	M	M	L	.	L	.	.	.	4
	.	.	L	L	L	H	L	L	L	L	.	L	L	.	.	.	1
	.	H	M	L	M	H	M	M	L	L	L	.	.	.	.	.	6
	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
	L	L	H	.	.	L	M	L	M	.	.	.	.	.	.	L	3
	.	L	L	.	H	L	H	M	M	L	.	L	.	L	.	M	5

Figure 10-17: Degrees of associated meanings with Detached house features.

House Features	privacy	gathering	study	hunger	ceremony	heaven	childhood	past	people	religion	social values	control	possession	security	responsibility	noise	Total of H & M
	Associated Meanings																
house	H	H	M	M	H	M	M	M	M	M	H	M	M	H	H	L	
decor	.	.	.	.	.	L	M	L	L	L	.	.	.	.	.	.	1
wall closet	L	L	.	.	L	.	L	L	.	.	.	L	H	L	L	.	1
inner window	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
outer window	.	.	L	.	.	L	H	L	L	.	L	.	.	L	.	M	2
lattice window	.	.	.	.	.	.	L	L	L	L	L	L	.	.	L	L	0
entry hall	M	L	L	L	L	.	L	L	L	L	L	L	L	M	.	M	3
guest rm	L	L	.	.	H	.	L	.	H	L	H	.	.	L	L	.	3
corridor	M	.	.	.	.	.	M	M	.	.	.	H	.	.	.	.	4
inner rm	.	L	.	.	M	.	.	.	L	.	.	M	.	.	.	L	2
kitchen	L	M	.	H	L	.	.	L	L	.	L	M	L	L	M	.	4
dinning rm	L	H	.	H	L	.	.	L	M	.	L	L	.	.	L	L	3
bed rm	H	.	H	L	L	M	L	L	M	L	L	M	H	H	L	L	7
living rm	M	H	M	.	M	.	L	M	H	M	H	L	L	M	L	L	9
main rm, Ka'a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
bath rm	M	.	L	.	.	.	.	L	L	L	.	L	L	L	.	.	1
fountn	.	.	M	.	.	M	.	L	L	.	.	.	.	.	.	.	2
trees and plants	L	L	L	L	M	H	M	M	L	M	.	L	L	L	L	.	5
garden/ctyrd	.	M	.	L	M	H	H	L	M	L	L	.	.	.	.	L	5
iwan	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	0
mshka/blcny	L	H	H	.	L	M	H	M	L	.	L	L	L	L	L	M	6
flat roof	.	.	M	.	M	L	H	M	M	L	.	L	.	L	L	L	5

Where,

"." extremely low association "L" Low association
"M" Moderate association "H" High association

Figure 10-18: Degrees of associated meanings with Elevator house features.

House Features	privacy	gathering	study	hunger	ceremony	heaven	childhood	past	people	religion	social values	control	possession	security	responsibility	noise	Total of H & M
	Associated Meanings																
house	M	H	L	L	M	L	L	L	L	M	M	M	M	H	H	L	
decor	.	.	L	.	M	M	.	L	L	M	.	.	L	.	.	L	3
wall closet	H	.	.	.	.	.	L	L	.	.	.	L	H	.	L	.	2
inner window	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
outer window	L	.	L	L	.	L	H	M	L	L	L	L	L	.	.	M	3
lattice window	M	.	.	.	L	.	L	M	.	M	.	.	L	.	.	L	3
entry hall	.	.	.	.	L	.	.	.	L	.	M	M	.	.	.	M	3
guest rm	L	H	M	.	H	.	L	L	H	.	H	L	L	.	.	.	5
corridor	L	.	.	.	.	.	.	.	M	.	M	H	.	.	.	.	3
inner rm	L	H	L	.	L	.	L	L	H	M	L	.	L	.	.	L	3
kitchen	M	L	.	H	L	L	L	M	M	.	L	M	L	L	H	L	6
dinning rm	.	L	.	M	L	.	.	.	.	.	L	.	.	.	.	.	1
bed rm	H	.	H	.	.	L	L	L	L	.	H	H	H	L	L		5
living rm	M	H	M	L	M	.	L	M	M	M	H	.	.	L	L	M	9
main rm, Ka'a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
bath rm	H	.	.	L	L	.	M	.	L	M	.	L	.	M	.	L	4
fountn	.	L	.	.	.	M	M	.	.	M	.	.	.	.	.	.	3
trees and plants	L	L	L	.	L	H	L	L	L	L	.	L	L	L	L	.	1
garden/ctyrd	.	H	L	.	H	H	H	L	H	H	H	L	.	L	.	H	8
iwan	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	0
mshka/blcny	L	M	H	.	L	M	H	M	H	L	L	L	L	L	L	M	7
flat roof	.	L	L	.	L	L	M	H	.	.	L	.	.	.	.	L	2

Figure 10-19: Degrees of associated meanings with Traditional neighbourhood elements.

Neighbourhood Elements	Associated Meanings: drink	students	hunger	ceremony	heaven	childhood	past	time	God	religion	relax	information	gossip	knowledge	cigarette	pollution	crowd	noise	meet people	symbol	landmark	bad people	youths	adults	spending money	art	tidy	untidy	solicitors	Total of H & M
neighbourhood	.	M	.	M	.	M	L	L	.	.	L	M	L	.	L	M	L	M	L	L	L	M	M	L	.	.	.	M	H	
strip commerce	M	M	H	M	.	M	H	M	.	.	M	M	H	M	M	M	H	M	M	M	H	.	M	M	H	.	M	H	.	22
plaza	.	M	H	.	.	M	.	M	.	M	.	.	.	.	M	M	H	.	.	M	H	.	.	.	H	H	M	.	.	13
grocery store	.	M	M	L	L	L	L	L	L	L	L	L	L	.	L	L	L	.	L	L	L	.	M	L	M	L	L	L	L	4
butcher shop	.	.	H	.	.	.	.	M	.	.	.	H	.	.	M	.	H	M	.	.	M	.	M	.	M	.	M	.	M	11
bakery	L	L	H	L	L	L	.	M	L	.	L	L	L	.	L	M	H	M	L	L	L	L	M	L	M	L	L	M	L	8
fastfood rst	L	M	M	L	.	H	L	M	L	L	L	H	L	L	L	L	M	M	M	M	M	.	L	L	H	L	L	L	M	12
coffee house	L	.	L	M	.	L	L	L	L	.	M	M	H	.	H	.	H	H	H	H	.	H	L	H	M	L	M	.	.	13
pharmacy	.	L	.	.	.	.	.	M	.	.	L	L	.	L	.	L	L	.	L	L	L	.	.	.	H	M	H	L	.	4
barber shop	.	.	.	L	.	.	.	L	.	.	M	H	M	.	H	.	L	.	L	.	.	.	.	.	H	.	L	.	.	5
clinic	.	.	L	.	L	L	L	L	L	L	.	.	L	L	.	.	L	L	.	L	M	.	.	.	H	L	H	.	.	3
bath	M	.	M	H	.	H	M	.	.	L	.	M	.	.	L	.	L	L	H	H	M	.	.	L	M	M	L	.	.	11
school	L	H	L	L	.	M	M	M	.	.	.	.	L	H	.	.	L	M	L	.	L	L	M	.	.	.	L	L	.	7
library	.	.	L	.	.	L	H	L	.	.	H	L	.	H	.	.	H	.	M	H	L	.	.	.	.	H	H	.	.	8
museum	.	L	.	.	L	L	H	.	L	.	M	.	.	L	.	.	.	.	M	H	L	.	.	.	.	H	L	.	.	5
mosque	L	L	.	L	H	L	L	H	H	H	M	L	.	H	.	.	M	L	L	H	H	.	L	H	L	H	H	.	.	12
pbc st.	L	H	L	M	L	H	.	L	L	L	L	L	L	L	.	H	H	M	.	L	H	L	M	.	.	M	M	L	.	10
semi-pbc st.	L	H	M	L	L	M	M	M	L	L	L	L	L	M	L	M	M	M	L	M	L	L	M	.	L	M	M	M	.	14
semi-pvt st.	H	.	.	.	.	H	H	M	L	.	.	.	.	.	L	.	.	.	M	M	.	.	M	.	L	.	.	.	M	8
covered st.	H	.	.	.	H	.	.	H	.	.	.	.	.	.	.	.	.	.	.	.	.	.	H	.	.	H	.	.	.	5
pedestrian	.	L	.	.	.	L	L	M	.	.	.	L	.	.	.	M	L	.	.	L	L	L	M	.	.	L	L	L	L	3
trees	L	.	.	L	L	L	.	L	H	L	L	.	.	.	.	.	.	.	.	L	L	.	.	.	.	L	M	.	.	2
parking lot	L	.	.	M	.	.	.	.	.	.	.	.	.	.	.	L	.	.	.	L	.	.	.	.	.	L	L	M	.	2
bus stop	H	L	.	M	L	L	H	H	L	.	L	.	L	.	H	H	H	M	.	L	.	H	L	.	.	.	.	H	M	11
park	M	M	L	L	L	H	M	.	L	L	H	L	H	L	M	.	M	M	H	L	L	L	H	.	M	.	M	L	L	13
elevator	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	0
stairs	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	.	L	L	L	L	.	.	M	L	.	L	.	.	.	1
drinkg fountn	H	.	L	.	M	L	L	L	M	L	.	.	.	.	.	.	.	.	.	H	M	.	L	.	.	H	L	.	.	6
fountn	H	.	.	.	.	M	.	.	.	M	M	.	.	.	.	.	.	.	M	M	.	.	.	.	.	H	.	M	.	8
door/fence	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	L	L	.	.	.	.	L	.	.	.	0
dome	.	L	.	L	L	H	.	.	H	H	.	.	.	L	L	.	H	L	.	H	H	.	.	.	.	H	L	L	.	7
minaret	.	.	.	L	H	L	L	M	H	H	M	.	.	L	.	.	L	L	L	H	L	.	L	.	.	M	M	L	.	8
arch	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	0
verbal signs	.	.	.	M	.	.	M	L	.	.	.	M	.	.	.	.	.	.	.	.	.	.	.	.	L	.	.	M	.	4

Where, "." extremely low association "L" Low association
"M" Moderate association "H" High association

Figure 10-20: Degrees of associated meanings with Attached neighbourhood elements.

Neighbourhood Elements	Associated Meanings: drink	students	hunger	ceremony	heaven	childhood	past	time	God	religion	relax	information	gossip	knowledge	cigarette	pollution	crowd	noise	meet people	symbol	landmark	bad people	youths	adults	spending money	art	tidy	untidy	solicitors	Total of H & M
neighbourhood	L	M	.	M	.	M	L	L	.	L	L	M	L	.	L	M	L	M	L	L	L	H	M	M	L	.	.	M	M	
strip commerce	M	L	M	H	.	H	M	M	.	L	M	L	L	.	H	M	H	M	H	M	L	M	.	L	H	L	M	M	H	19
plaza	.	.	H	L	L	.	.	M	L	L	L	L	M	L	M	.	H	L	.	.	L	.	.	L	H	M	H	.	L	9
grocery store	.	.	H	.	.	L	.	.	.	.	L	M	L	L	.	.	L	L	.	.	L	L	.	L	H	.	.	M	M	5
butcher shop	.	.	.	.	.	L	.	.	.	.	.	M	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	L	.	1
bakery	M	L	H	.	.	L	L	M	L	.	.	M	M	M	M	.	H	H	L	.	.	L	M	M	H	.	L	M	M	14
fastfood rst	H	.	H	.	.	.	.	.	.	.	.	M	M	.	H	.	.	M	.	.	.	.	.	.	H	.	.	H	H	9
coffee house	H	.	H	H	.	.	M	.	.	.	M	M	H	.	H	.	H	M	H	.	M	H	.	.	H	.	M	.	.	15
pharmacy	L	.	L	.	.	L	L	L	L	L	.	.	L	L	L	.	L	L	.	.	L	.	.	.	H	L	M	.	.	2
barber shop	.	.	.	H	.	L	L	M	.	L	L	H	H	L	H	.	M	M	M	.	.	.	.	L	H	L	M	.	.	10
clinic	L	.	L	.	.	.	L	M	L	L	L	L	L	L	M	.	H	L	L	.	L	.	.	.	H	L	H	.	.	5
bath	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	M	M	.	.	.	.	.	.	.	.	3
school	L	H	M	L	L	M	H	M	L	.	L	L	L	H	.	.	L	M	L	L	M	L	M	.	L	L	L	L	L	9
library	.	.	.	.	.	M	H	H	L	L	L	M	M	H	L	.	M	.	M	H	H	.	.	L	M	M	H	.	.	13
museum	.	.	.	.	L	.	.	M	L	L	.	.	L	.	.	.	L	.	.	M	M	.	.	L	.	M	.	.	.	4
mosque	M	.	L	M	H	L	L	H	H	H	M	L	L	M	.	.	M	.	M	H	H	.	.	H	.	H	H	.	.	15
pbc st.	M	H	L	M	L	H	.	L	L	.	H	.	.	.	M	H	M	H	L	.	.	L	.	.	.	.	.	.	L	8
semi-pbc st.	M	H	L	.	.	M	.	L	.	.	L	L	L	.	L	H	.	M	.	.	.	L	M	.	.	.	.	L	M	7
semi-pvt st.	H	H	.	.	.	H	.	.	L	.	.	M	.	.	.	.	.	.	.	.	M	M	L	L	.	.	.	H	M	8
covered st.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	.	0
pedestrian	L	M	L	.	.	H	.	L	.	.	.	.	.	.	L	.	L	M	.	.	.	.	M	.	L	.	.	M	L	5
trees	M	M	L	M	M	M	H	L	M	.	L	L	L	.	.	L	L	.	H	L	L	L	L	.	.	M	H	L	L	10
parking lot	.	.	L	L	.	M	H	L	.	.	M	.	.	L	L	H	L	M	L	.	.	L	.	M	.	.	.	L	.	6
bus stop	M	L	L	.	L	.	L	H	L	L	M	L	L	L	H	H	H	M	L	.	L	M	L	L	L	.	.	H	L	9
park	M	H	M	M	M	M	M	L	M	L	H	L	M	L	L	L	H	L	H	L	L	L	H	L	M	L	M	L	L	15
elevator	.	.	.	.	.	.	L	.	L	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
stairs	M	M	L	M	L	M	M	.	.	.	M	L	L	.	L	L	L	M	L	L	L	L	H	.	.	.	L	H	.	8
drinkg fountn	H	.	L	.	M	L	L	.	M	H	L	.	.	L	.	.	.	L	.	M	L	L	L	L	L	M	L	L	L	6
fountn	H	.	L	L	M	L	M	L	M	M	M	.	.	.	.	L	.	L	L	M	M	L	L	.	.	H	M	L	L	10
door/fence	.	.	.	.	M	.	M	M	.	.	.	.	.	.	M	.	.	M	M	.	.	.	.	.	L	.	M	.	.	7
dome	.	.	.	M	H	L	M	L	H	M	L	.	L	L	.	.	.	.	.	H	L	.	L	L	.	H	L	.	L	7
minaret	.	L	.	L	H	L	L	M	H	H	.	.	.	.	.	.	.	.	L	M	M	.	.	L	.	H	M	.	.	8
arch	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	M	.	.	.	.	.	.	.	.	.	1
verbal signs	.	L	.	L	.	.	L	L	.	.	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	M	M	M	.	4

Where, "." extremely low association "L" Low association
"M" Moderate association "H" High association

Figure 10-21: Degrees of associated meanings with Detached neighbourhood elements.

Neighbourhood Elements	Associated Meanings: drink	students	hunger	ceremony	heaven	childhood	past	time	God	religion	relax	information	gossip	knowledge	cigarette	pollution	crowd	noise	meet people	symbol	landmark	bad people	youths	adults	spending money	art	tidy	untidy	solicitors	Total of H & M
neighbourhood	L	M	L	M	.	M	L	L	.	.	L	M	L	.	L	M	L	L	L	L	L	H	M	L	.	L	L	M	M	
strip commerce	M	.	H	L	.	M	L	.	.	L	L	L	L	L	M	M	H	H	L	L	M	L	.	L	H	L	L	M	M	11
plaza	L	.	H	L	.	L	L	M	.	.	L	L	.	L	M	.	L	L	L	.	L	.	.	.	H	L	H	.	L	5
grocery store	.	L	H	.	.	L	L	M	.	.	M	H	H	L	L	.	M	L	L	.	L	L	L	M	H	.	L	M	M	10
butcher shop	.	.	L	L	L	.	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	L	.	.	M	L	1
bakery	L	L	H	.	.	L	L	M	L	.	.	.	.	L	L	L	H	H	.	.	.	L	L	L	H	.	.	M	M	7
fastfood rst	M	.	H	.	.	H	M	.	.	.	L	M	L	.	L	.	L	M	L	H	L	.	.	L	H	L	M	L	H	10
coffee house	M	.	.	.	.	M	M	M	.	.	.	.	.	L	M	.	M	M	M	.	M	M	.	M	M	.	.	.	.	12
pharmacy	.	.	.	.	.	.	M	L	L	.	.	.	.	.	.	.	L	.	.	.	M	.	.	L	H	L	H	.	.	4
barber shop	L	.	.	H	.	.	L	H	.	L	M	H	H	.	H	.	H	M	L	L	L	.	.	L	H	L	H	.	.	10
clinic	L	.	L	.	L	.	.	H	M	L	L	.	L	L	L	.	H	L	L	.	L	.	L	L	H	L	M	L	.	5
bath	L	.	.	.	.	.	.	L	.	L	.	.	.	.	.	.	.	L	L	M	.	.	.	.	.	L	.	.		1
school	L	H	M	L	L	H	H	L	.	L	.	.	L	H	.	.	M	H	.	L	M	L	M	L	L	.	L	M	.	10
library	.	.	L	L	L	M	M	M	.	L	L	L	.	H	.	.	.	.	M	M	M	.	.	.	M	M	H	.	.	10
museum	.	.	.	.	.	M	H	L	.	.	.	.	.	L	.	.	L	.	.	M	H	.	.	.	.	H	M	.	.	6
mosque	M	.	.	.	H	L	L	H	H	H	M	L	.	H	.	.	M	.	L	H	H	.	.	H	.	H	H	.	.	13
pbc st.	H	M	.	L	M	L	L	H	L	.	M	L	L	L	.	H	M	H	L	L	L	L	L	L	.	L	M	M	L	10
semi-pbc st.	L	H	.	.	.	H	.	M	.	L	.	.	.	.	.	L	.	L	.	.	L	L	H	.	.	.	.	.	L	4
semi-pvt st.	L	.	L	L	.	L	L	.	.	.	L	.	.	L	L	L	.	L	.	.	.	L	M	.	.	.	.	M	L	2
covered st.	.	M	.	.	L	L	L	.	L	L	L	.	.	.	.	.	.	.	L	L	M	L	M	.	.	L	.	.	.	3
pedestrian	L	M	L	L	.	M	.	.	.	.	M	.	L	.	L	.	.	.	.	L	L	L	L	.	.	.	L	L	L	3
trees	.	M	L	L	H	M	M	.	M	.	H	.	L	.	.	L	.	.	H	L	L	L	L	.	L	M	M	.	.	9
parking lot	L	.	L	L	.	.	.	M	.	.	.	L	M	.	L	.	L	L	.	L	.	.	L	L	L	.	H	L	.	3
bus stop	.	.	L	.	.	.	M	H	.	.	.	L	M	.	H	M	H	M	.	.	L	L	.	.	.	.	L	M	L	8
park	H	H	L	.	M	M	M	.	L	.	H	.	M	L	.	L	H	L	H	.	M	M	H	L	L	M	M	.	L	14
elevator	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
stairs	L	.	.	.	.	M	L	.	.	.	L	.	M	.	.	.	.	L	L	L	L	L	M	L	.	L	L	L	.	3
water fountn	H	L	.	.	L	L	L	.	L	.	L	.	.	.	.	.	.	L	L	M	L	.	M	.	.	M	.	L	.	4
fountn	H	.	.	L	.	L	L	.	.	.	L	.	.	.	.	.	.	.	L	H	M	.	L	.	.	H	L	.	L	4
door/fence	.	M	.	M	M	L	M	.	L	.	M	M	M	.	.	.	.	M	H	.	.	.	M	M	.	.	H	.	.	12
dome	.	.	.	.	H	.	.	M	H	H	.	.	.	M	.	.	.	.	.	H	M	.	.	.	L	M	.	.	.	9
minaret	L	.	.	L	M	.	L	H	H	H	L	.	.	M	.	.	L	.	M	M	H	.	.	.	.	H	H	.	.	10
arch	.	.	.	M	H	.	M	L	M	M	.	.	.	.	.	.	.	.	.	H	M	.	.	.	.	H	.	.	.	3
verbal signs	.	.	M	L	.	.	L	L	.	L	L	M	L	.	.	.	.	.	.	.	.	.	.	.	.	L	L	H	L	3

Where, "." extremely low association "L" Low association
"M" Moderate association "H" High association

Figure 10-22: Degrees of associated meanings with Elevator neighbourhood elements.

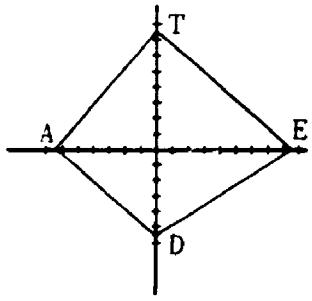
Associated Meanings

Neighbourhood Elements	drink	students	hunger	ceremony	heaven	childhood	past	time	God	religion	relax	information	gossip	knowledge	cigarettes	pollution	crowd	noise	meet people	symbol	landmark	bad people	youths	adults	spending money	art	tidy	untidy	solicitors	Total of H & M
neighbourhood	L	M	L	L	L	L	L	.	L	L	L	M	L	L	L	M	L	L	L	L	L	M	M	L	.	.	.	L	M	
strip commerce	L	L	H	M	.	L	L	L	.	.	.	M	M	L	M	L	H	H	M	L	.	H	.	L	H	L	L	L	H	11
plaza	L	L	H	L	.	L	L	L	.	.	L	H	L	.	M	L	H	M	L	.	M	L	L	M	H	M	H	L	.	10
grocery store	L	L	H	L	L	L	L	.	.	.	.	M	L	.	L	.	L	.	L	.	.	.	L	L	H	.	.	M	M	5
butcher shop	.	.	M	.	.	L	L	.	.	.	L	M	.	.	.	.	.	.	.	.	H	.	.	.	H	.	.	.	M	5
bakery	M	.	H	.	.	.	.	H	.	.	.	M	M	.	H	M	H	H	.	.	.	L	.	M	H	.	.	H	M	13
fastfood rst	M	.	H	.	.	M	.	.	.	.	L	.	.	.	.	.	H	.	M	M	.	.	.	.	.	.	.	M	.	7
coffee house	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
pharmacy	.	.	.	.	L	.	.	M	L	M	.	L	L	M	.	.	L	L	.	.	.	.	.	.	M	.	H	.	.	5
barber shop	.	.	.	L	.	L	.	M	.	.	L	H	M	.	H	.	M	L	.	L	L	.	.	.	H	L	L	.	.	6
clinic	.	.	L	.	M	L	L	H	M	M	M	L	L	L	L	.	M	L	M	.	M	.	.	.	M	M	H	.	.	11
baths	.	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	0
school	L	H	L	L	.	M	M	M	L	L	.	L	L	H	.	.	L	M	M	.	M	L	M	.	L	.	L	L	.	9
library	.	.	.	.	.	.	H	L	L	.	.	.	.	H	.	.	L	.	.	L	H	L	.	L	L	L	M	L	.	4
museum	.	.	.	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.	M	M	.	.	.	.	.	.	.	.	2
mosque	L	.	.	L	H	.	.	M	H	H	L	.	.	H	.	.	M	.	L	H	M	.	.	H	.	H	H	.	.	11
pbc st.	M	M	L	.	.	L	L	M	L	.	L	L	L	.	L	H	M	M	.	.	L	M	L	L	.	L	L	L	M	8
semi-pbc st.	.	M	.	.	.	M	L	M	.	.	.	L	L	.	.	H	.	L	.	L	.	M	.	.	.	.	L	M	M	7
semi-pvt st.	L	M	.	.	L	L	L	L	.	.	L	M	M	.	L	.	M	H	M	M	L	M	M	L	L	L	.	L	L	9
covered st.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
pedestrian	.	M	.	L	.	L	M	.	.	.	.	L	L	.	L	L	L	M	L	.	.	H	M	L	.	.	.	M	.	6
trees	L	M	.	L	H	M	H	L	H	L	H	.	L	L	L	L	L	.	H	L	L	L	M	L	.	M	M	L	L	10
parking lot	L	M	.	M	L	L	L	L	.	.	.	M	L	.	L	H	L	L	.	.	.	L	M	H	.	.	L	.	.	6
bus stop	L	L	L	.	L	L	M	H	L	L	L	.	L	L	M	M	M	M	L	.	L	L	L	.	L	.	.	M	L	7
park	M	H	H	L	M	H	M	L	M	L	H	L	H	L	L	.	H	L	H	.	L	M	H	.	L	M	H	L	L	14
elevator	.	L	.	M	.	M	M	M	L	.	M	L	L	L	M	.	L	.	M	.	L	L	L	.	.	L	L	L	.	7
stairs	L	L	M	H	.	M	M	.	.	.	H	M	L	L	M	.	L	L	L	.	.	L	M	L	.	.	L	L	.	8
drinkg fountn	H	L	L	.	L	L	M	.	H	.	.	.	.	.	.	.	.	L	.	H	H	.	.	.	.	H	L	.	.	6
fountn	H	M	.	M	.	.	.	.	.	.	M	.	.	.	.	.	.	.	M	M	.	.	M	.	.	H	M	.	.	9
door/fence	L	H	L	M	.	L	M	.	.	.	H	L	M	.	L	.	L	M	L	.	L	.	H	L	L	.	M	L	.	8
dome	L	.	.	M	M	.	.	.	H	H	.	.	.	.	.	.	.	.	.	H	H	.	M	.	M	M	M	.	.	10
minaret	.	.	.	.	H	.	.	H	H	H	.	.	.	.	.	.	.	.	.	M	.	.	.	.	.	H	L	.	.	6
arch	L	.	.	L	.	.	L	L	.	.	.	.	L	.	.	L	.	.	L	L	L	.	.	.	.	L	.	L	.	0
verbal signs	.	.	.	M	L	.	M	L	M	L	.	M	.	.	.	L	.	.	.	.	L	L	.	L	.	L	.	M	.	5

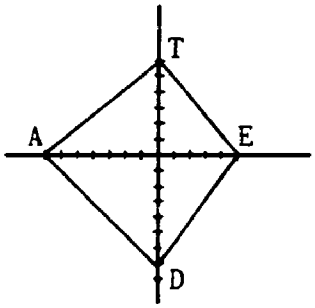
Where, "." extremely low association "L" Low association
"M" Moderate association "H" High association

Figures 10-23: Comparision of T (Traditional), A (Attached), D (Detached), E (Elevator) house features for the Number of high to moderate associated meanings. Cases with no extreme relative differences. Each measurement unit (2 mm.) represents one high or moderate associated meaning.

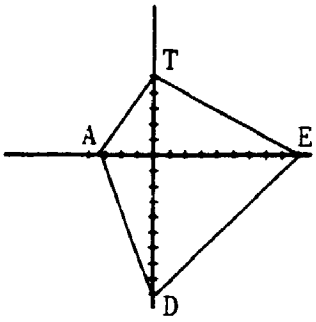
garden/courtyard



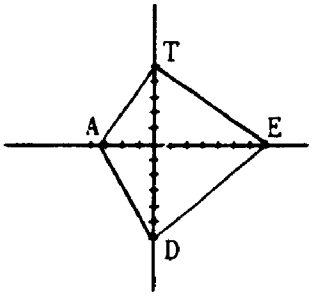
bedroom



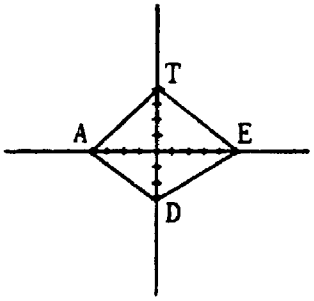
living room



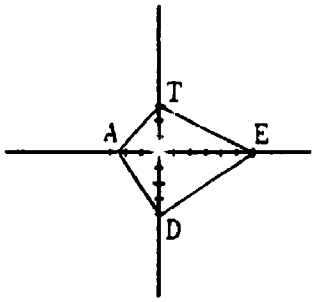
mashraka/balcony



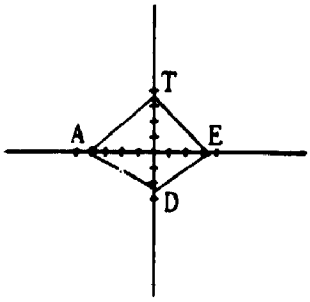
guest room



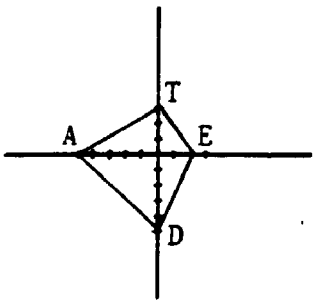
kitchen



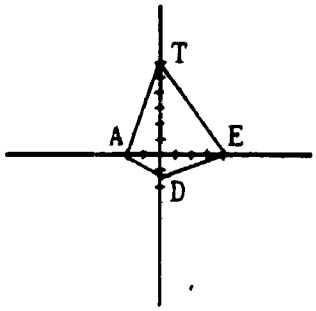
fountain



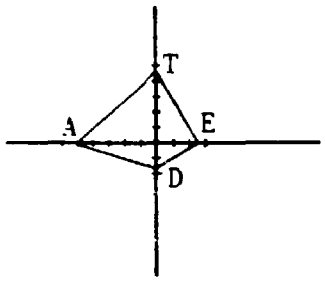
flat roof



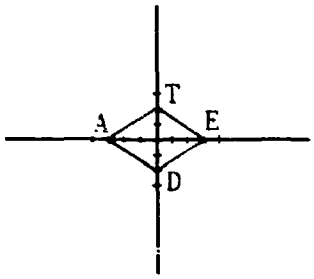
bathroom



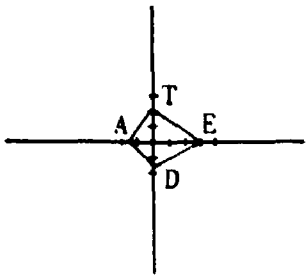
wall closet



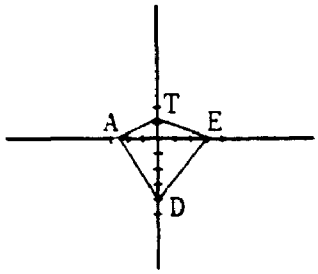
outer windows



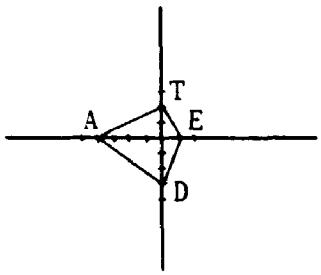
decor



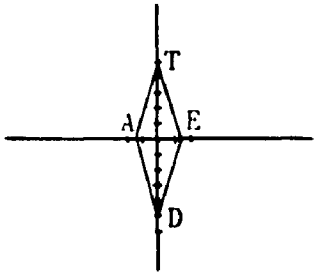
corridor



dining room

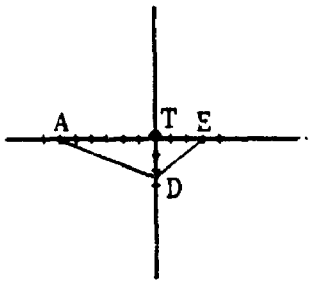


trees/plants

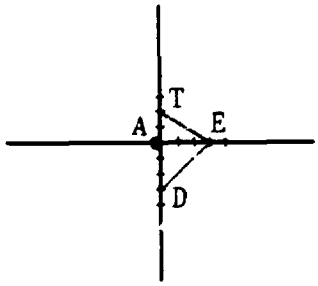


Figures 10-24: Comparision of T (Traditional), A (Attached), D (Detached), E (Elevator) house features for the Number of high to moderate associated meanings. Cases with extreme relative differences. Each measurement unit (2 mm.) represents one high or moderate associated meaning.

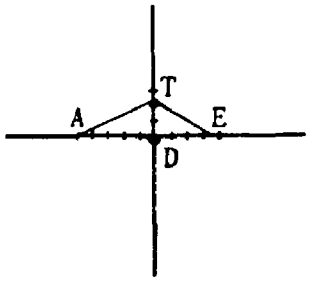
inner room



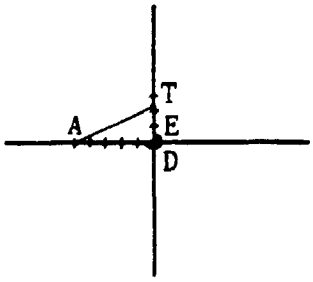
entrance



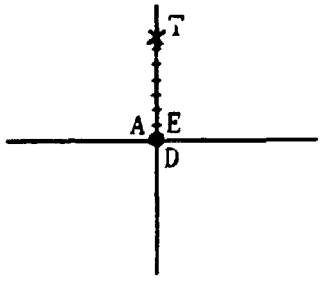
lattice window



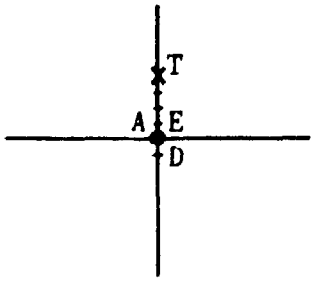
main room / Ka'a



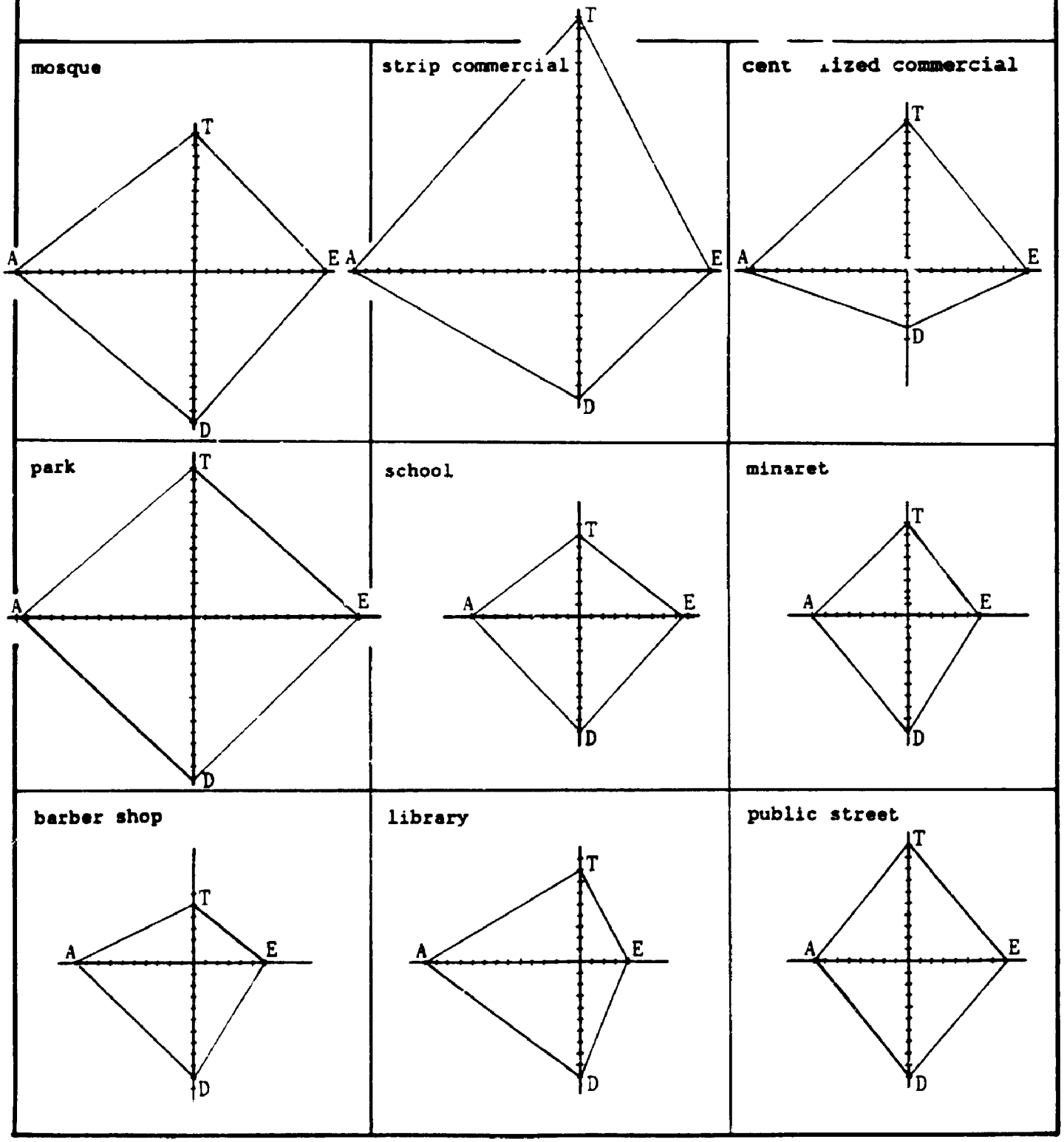
ıner window



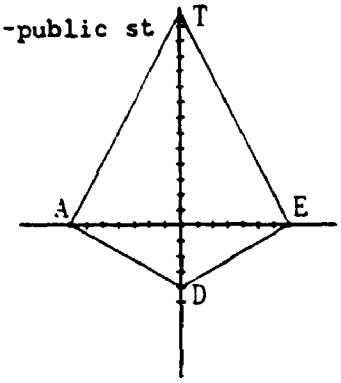
iwan



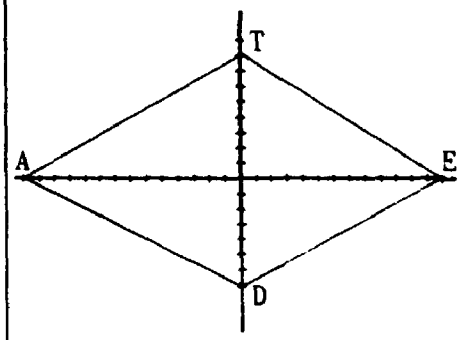
Figures 10-25: Comparision of T (Traditional), A (Attached), D (Detached), E (Elevator) Neighbourhood elements for the Number of high to moderate associated meanings. Cases with no extreme relative differences. Each measurement unit (2 mm.) represents one high or moderate associated meaning.



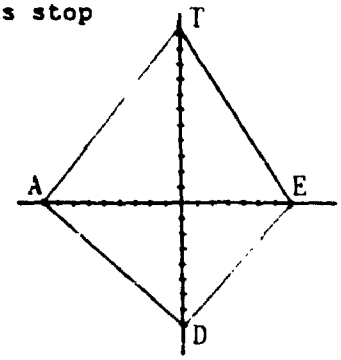
semi-public st



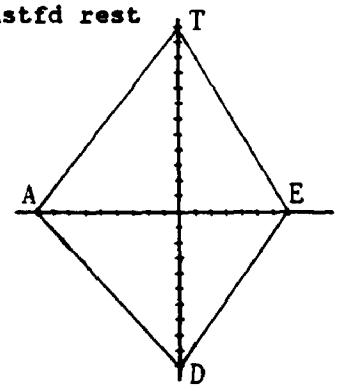
bakery



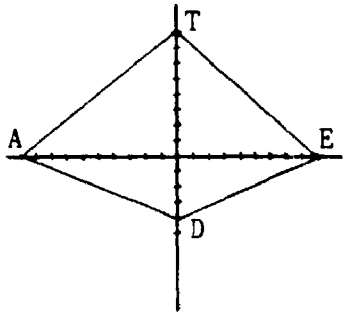
bus stop



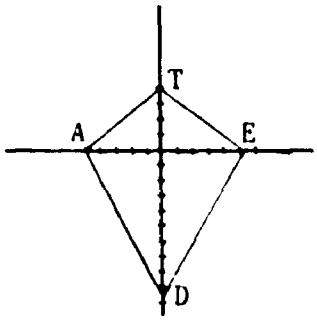
fastfd rest



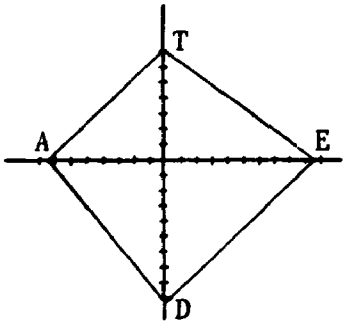
fountain



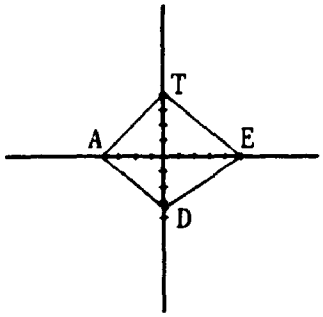
grocery store



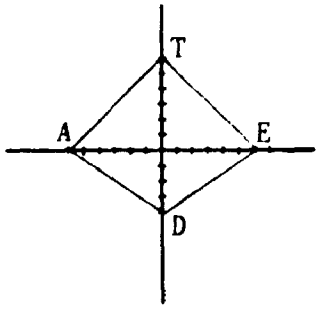
dome



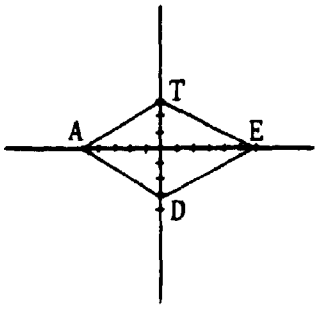
verbal sign



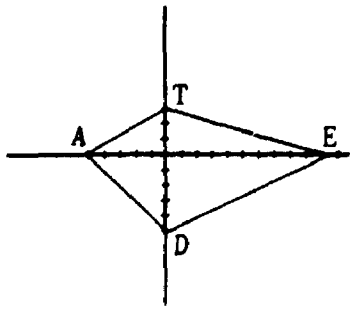
drinking fountain



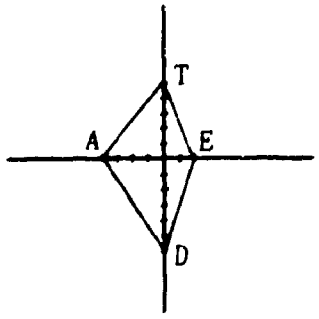
pedestrian road



clinic

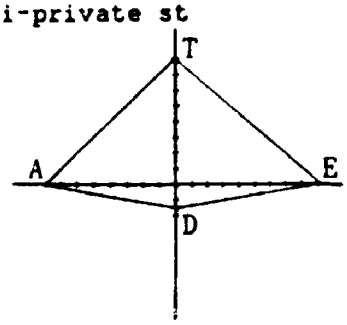


museum

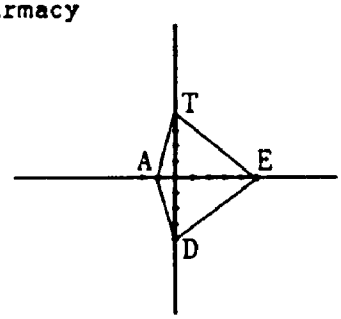


Figures 10-26: Comparision of T (Traditional), A (Attached), D (Detached), E (Elevator) neighbourhood elements for the Number of high to moderate associated meanings. Cases with extreme relative differences. Each measurement unit (2 mm.) represents one high or moderate associated meaning.

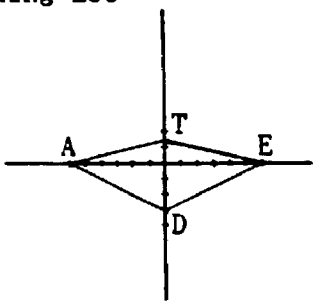
semi-private st



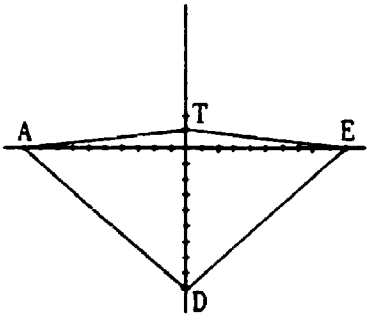
pharmacy



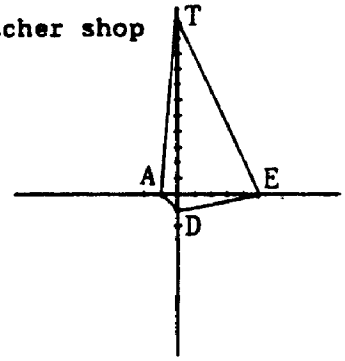
parking lot



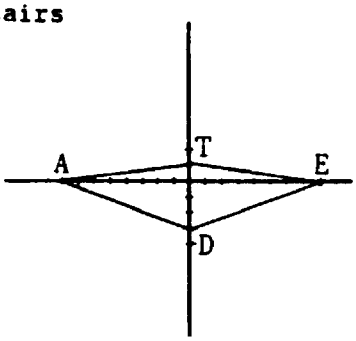
trees/plant



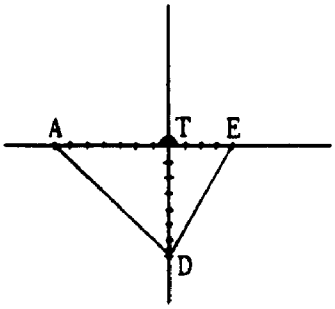
butcher shop



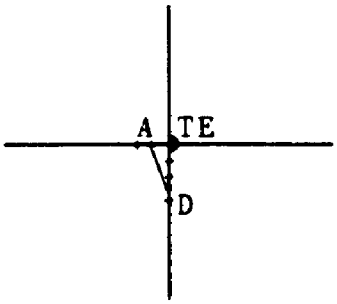
stairs



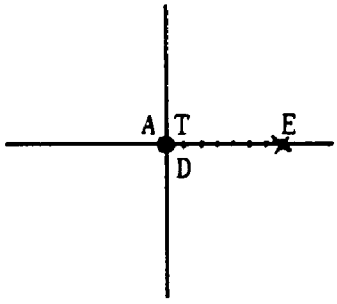
gate/fence



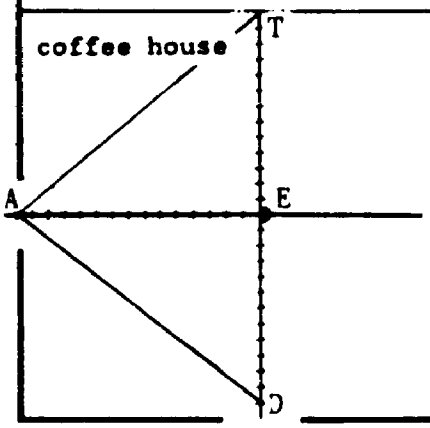
arch



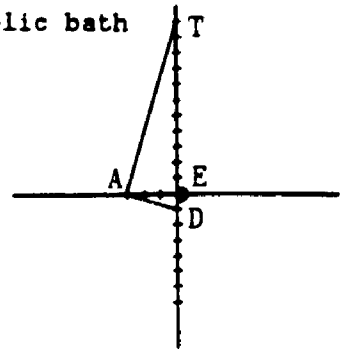
elevator



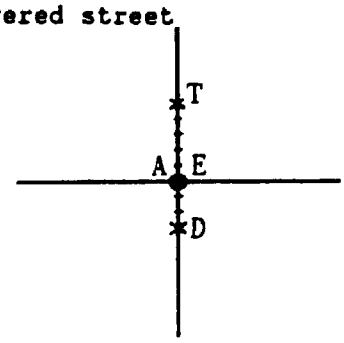
coffee house



public bath



covered street



House Features

Residents' preference for features is affected by two factors: 1) priority given to a feature above others, e.g., *Ka'a* show more importance than guest rooms for traditional house residents, and 2) experience with such features, e.g., the dining room is not common in Traditional houses, but in Attached apartments, it has a multi-use for studying, entertaining guests, and family living. Multi-use of the dining room is necessitated by the small size apartment, as discussed in Chapter 6. Elaboration of other features will be in the "Discussion" section of this chapter.

In Figures 10-23 both garden/courtyard and bedroom show above average (3.4) associated meanings by residents of all house types. Other graphs of Figure 10-23 show a variation in number of meanings (above and below the average) by all house types; these are: living room, balcony/ *mashraka*, guest room, kitchen, fountain, flat roof, bathroom, wall closet, outer window, decor, corridor, dining room, and trees.

Six other features are recorded with extreme relative differences (see Figure 10-24). These are: inner room, entrance, lattice window, main room/Ka'a, inner window, and iwan, only one of which (the inner room) is a common modern feature. This supports the premise that associated meanings are affected by the degree of observability.

Neighbourhood Elements

As shown in Figure 10-25, all residents strongly associated meanings for four elements above average of (7.2). These are: mosque, strip commercial, park, and public street. The other graphs of Figure 10-25 show variations in number of meanings (above and below the 7.2 average) used by residents of all neighbourhoods. These elements are: central commercial, school, minaret, barber shop, library, semi-public street, bakery, bus stop, fast food restaurant, fountain, grocery store, dome,

verbal sign, drinking fountain, pedestrian road, clinic, and museum.

As shown in Figure 10-26, six elements have associated meanings with extreme relative differences. These are: semi-private street, pharmacy, parking lot, tree, butcher shop, and stairs. In addition, there are six other elements that residents of one, two, or three neighbourhood types did not have associated meanings. These elements are: gate/fence, arch, elevator, coffee house, public bath, and covered street. With the exception of elevator and gate, the other four elements are common to the Traditional neighbourhood. As indicated in the previous paragraph, there are two main factors that cause these differences: competition with other elements and interaction with elements, as will be elaborated on in the "Discussion" section. For example, trees along streets are not common on Traditional streets but are on Modern streets.

The Mann-Whitney Test is used to evaluate the hypothesis that there are no significant differences of associated meanings with house features and neighbourhood elements by inhabitants of the four residential areas (see Table 10-7).

Table 10-7: Results of Mann-Whitney Test on numbers of strongly associated meanings by occupants of all residential areas to house features and neighbourhood elements, at the 0.1 significance level (P). H0 = null hypothesis, T = Traditional, A = Attached, D = Detached, E = Elevator

	House Features		Nghd Elements	
Pair of Ngbd	P	H0	P	H0
TA	0.56	ACCEPT	0.67	ACCEPT
TD	0.27	ACCEPT	0.95	ACCEPT
TE	0.59	ACCEPT	0.89	ACCEPT
AD	0.56	ACCEPT	0.85	ACCEPT
AE	0.88	ACCEPT	0.61	ACCEPT
DE	0.62	ACCEPT	0.84	ACCEPT

Table 10-7 shows that at the 0.1 probability level the null hypothesis is accepted by all paired cases. However, by examining the

probability of house features and neighbourhood elements of all residential areas, it is noticeable that some pairs have probability levels smaller than the probability levels of other pairs. It can be concluded that there are different associated meanings with urban signs (house/ neighbourhood) between residents, especially in the case of Traditional and Attached house features, though they are not always significant.

10-6. Associated Meanings

Residents of all house or neighbourhood types differ in the associated meanings of house and neighbourhood elements, as shown in Tables 10-8 and 10-9. Table 10-8 shows that residents of all four house types frequently described their house features with the words private, gathering, study, ceremony, sacred, childhood, past, people, religion, and social values. In addition, Elevator residents associated the word noise with their houses. By concentrating on the highest values, it is noticeable that residents of Traditional houses have higher frequency (8 and 9) for five features (privacy, gathering, study, childhood, people). While the highest frequency for the three Modern areas are 6 and 7, with one exception in the Attached apartment, where the word people scored 9 points.

Attached apartments can be described by highest frequencies of four words: privacy, ceremony, memory of childhood, and people; while Detached apartments can be described by three words: ceremony, childhood, and reminder of people, 6 and 7 points. Elevator areas are described by the words: privacy, reminder of childhood, past, and people. The weakly associated meanings have frequency values of 1 and 2.

Table 10-9 shows that residents of all neighbourhood types

frequently described their neighbourhood with words such as memory of childhood, past, time, a place for relaxation, gaining information, crowd, noise, meeting people, symbol, landmark, youth, waste money, art, tidy, and untidy place. In addition, residents of the Attached

Tables 10-8,9: Frequencies of associated meanings for house features and nei hbourhood elements. All house and neighbourhood cases. Underlined values are above the mean value.

Table 10-8: House

Meanings	T	A	D	E
Private	8	7	5	6
gathering	8	5	5	5
study	9	5	5	4
hungry	1	2	2	2
ceremony	4	6	6	4
heaven	5	3	5	5
childhood	8	6	7	6
past	6	4	5	6
people	9	9	6	7
religion	5	5	2	7
social value	4	4	2	5
control	2	4	4	4
possession	1	4	2	2
security	4	3	3	2
responsible	2	2	1	1
noise	1	2	3	5
Means	4.4			

Table 10-9: Neighbourhood

Meanings	T	A	D	E
drink	8	14	8	6
student	8	8	8	10
hungry	8	8	7	8
ceremony	7	9	3	8
heaven	4	8	9	6
childhood	11	11	12	7
past	10	11	12	11
time	14	12	14	11
God	5	7	7	8
religion	5	5	5	5
relaxation	9	9	9	7
information	7	9	5	10
gossip	4	7	7	6
knowledge	5	4	5	4
cigarette	7	10	5	7
pollution	7	5	3	5
crowd	13	11	11	11
noise	10	14	9	9
meet	9	8	7	8
symbol	14	10	11	8
landmark	10	9	13	9
bad people	2	4	2	6
youth	12	6	8	10
adult	3	3	4	4
spend money	12	11	10	9
art	13	10	10	9
tidy	12	14	14	10
untidy	7	9	9	7
solicitor	4	6	4	7
Means	8.2			

neighbourhood associated meanings of drink and cigarettes to their neighbourhood; and residents of the Elevator neighbourhood associated the meaning students. By looking at the highest frequencies, it is noticeable that residents of Traditional, Attached, and Detached neighbourhoods have similar frequencies (12, 13 and 14) whereas the highest frequencies for

residents of the Elevator neighbourhood are 9, 10, and 11. Traditional house residents describe the three highest frequencies by seven words: childhood memory, time, crowd, symbol, young people, spend money, art, and tidy, while occupants of Attached apartments have associated four meanings: drink, time, noise, and tidy. Detached neighbourhoods are described by five words: Childhood, past, time, landmark and tidy. Finally, Elevator neighbourhoods are described at frequencies of 11, 10, and 9 by the words students, past, time, information, crowd, noise, landmark, youth, spend money, art and tidy.

Findings:

Traditional house features carry higher extreme frequency of associated meanings than the other three Modern-apartment types, while in the case of neighbourhood elements, the Traditional, Attached, and Detached areas have similar extremes of frequencies, and the Elevator area has less extreme frequency of associated meanings.

10-7. Discussion

This section discusses factors that create variations in people's preference for signs, and variations in their associated meanings with house features and neighbourhood elements. Because the discussion of all house features and neighbourhood elements proves to be lengthy, only a few examples are presented, selected to represents good cases for comparison among all residential areas. The semantic discussion of the other house features and neighbourhood elements is presented in Appendices M and N.

All tables and figures introduced above are explained in detail here. Special attention is given to the ranked signs (house features and neighbourhood elements) shown in Figures 10-5 and 10-6, and to the meanings of these signs, shown in Figures 10-15...22.

For comparative discussion of Figures 10-15,..,22, three steps are

taken. 1) Within a parentheses the symbols, indicating the level of presentation of meanings of a sign by residents of all neighbourhoods, are indicated; e.g., (H,L,M,M). The order of these symbols is as follow: Traditional, Attached, Detached, and Elevator. In some cases the discussion compares sign meanings among three, or between two residential areas. In any case, the sequence of the symbols still follows the previous order.

2) The "." degree of association meanings with a sign is not accounted in the discussion below because of such low levels of significance. From three degrees of associated meanings, "H, M, and L", the discussion will emphasize M and H meanings. In some cases, "L" meanings are considered when there are believed to be part of the functional meanings of a sign, or inseparable from the other H, and M meanings.

3) While concentrating the discussion on H,M,L levels of meaning, a cross examination of the four Figures 10-15,..22 follows. Some signs share some meanings in similar degree of association. For example, in all residential types, the guest room is interpreted with a high level of associated meanings (H,H,H,H) such as a place where ceremonies take place, memory of some people, and social rules such as privacy are expressed. On Figures 10-15,..,22 the meanings that have similar degrees of associated meanings across the four neighbourhoods are underlined. Some signs also share meanings but in different degrees of association (H,M,L). For example, dining room is interpreted as a place for gathering (H,H,H,L) and as a reminder of hunger (L,H,H,M). On Figures 10-15,..,22 the meanings that fulfil this condition are printed in bold.

10-7-1. Associated Meaning with House Features

The discussion follows this order:

1. house
2. room features

3. windows
4. components

Each feature will be headed with the meanings that are attached to it. When the meaning of a sign has (H) a high degree of association, it is printed in bold.

1. Houses: **hunger, ceremony, heaven, religion, childhood, gathering, study, past, people, social, control, possession, privacy, security, responsibility.**

The "house" is a place that people use daily. They grow up in it, attend the family events there; it is a place of continuity. Inhabitants look at "house" as a meaningful object. It is a place strongly associated with security (H,H,H,H) and privacy (H,M,H,M), and where one has responsibility (H,H,H,H) to other members of the family. There, family gather (M,M,H,H). Certain rules that reflect social values (M,L,H,M) are set by parent(s) concerning sleeping time, eating time, how to talk, how to help in cleaning, how to cook, and how to share life with others. These rules control (M,L,M,M) family members' behaviour. With passing time, sad and happy events occur inside the house, and stay in our mind. House is to some degree associated with childhood and people (L,L,M,L) linked through mind with place. On that chair my father sits, this colour of wall was selected by all of us, and so on. The number of meanings of "house" is endless for us. While the meanings vary from one person to another, there are shared meanings that these findings document.

2. Room Characteristics

Decoration: **heaven (sacred), religion, past**

Decoration is found in private places, as well as in public places. Middle Eastern, like other Muslim countries, cover ceilings, walls, and closets with art, and use furniture, plates, and vases both as aesthetic pieces and as elements in a larger artistic assemblage. It seems that

empty space is disliked (Alrefai, 1977). Whether it is borrowed from other civilizations and transformed, the decoration reflects Islamic ideology of human and universal reality. Islamic decoration combines truth and beauty: truth of God as One, the only Creator presented in geometrical abstract form with a clear centre. Also, equality among people regardless of their race or religion is also represented by repetition of a decorative abstract unit.

> "The Islamic art is not necessarily the art which preaches about Islam,....., but it is the art that draws the picture of the universe from an Islamic imaginative angle,..., it is the beautiful expression of universe, life and mankind from the Islamic image of universe, life, and mankind. Islamic art is the art that prepares the perfect encounter between "beauty" and "truth". The beauty is the truth of this universe, and the truth is the pick of beauty; and from here both meet at the top where the all truth of exitance meet." (Mahammad Qutub, cited in Alrefai, 1977, p 9, translated by the author)

With the introduction of modern architecture, in Attached, Detached, and Elevator residential buildings, decoration was neglected as a main feature in house design. In Attached and Detached apartments, decoration appears as a frame on the ceiling filled with different textures of paint. Walls also decorated by rough paint textures, such as repetition of half circles, one inside the other. In the last two decades, use of gib-decoration in Modern houses has increased noticeably. Artists decorate ceilings with a centre ceiling fountain, the edge lined with gold leaf. Arches and columns also are decorated by abstract plant forms painted gold.

Increased demand for decoration encourages commercial artists to use different designs by application of stylistic patterns, mixing European and Middle Eastern traditional decorative elements from different eras. As a result of this demand, the traditional style is being resurrected, but is more expensive than the gib-decoration. (see Figure 10-27)

Table 10-5 shows that inhabitants of the Traditional houses highly prefer room decoration, while inhabitants of both the Detached and the Elevator apartment buildings indicate moderate preferences. In the Attached apartments, room decoration is ranked below the middle of the list. Decoration is expensive; therefore, use of it in Attached apartments is less than in other types of Modern houses where wealthier families live. Associated H & M meanings (see Figure 10-23-Decor) are obvious for Tradi·ional houses and Elevator Apartments. Meanings for decoration in all residential areas are signs of heaven (M,M,L,M) and religious (M,L,L,M) place. This sign is also interpreted as a reminder of the past (L,M,L,M). (see "Closet" in Appendix M)

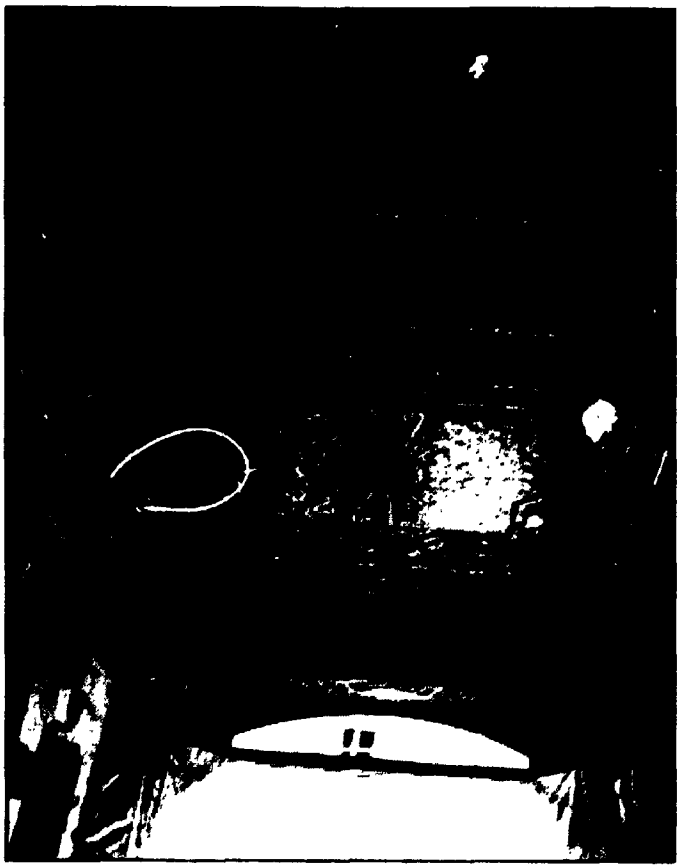


Figure 10-27:

Traditional decorated ceiling. The centre circle is a Quranic version, that reads "with the name of Allah the most merciful and most graceful". Alkalasa Quarter, Damascus. Photo by the author, 1991.

3. Windows

Inner Window: gathering, study, childhood, past, people, social, security

Outer Window: childhood, past, people, noise,

Because of constant human needs for light and fresh air, windows are constructed. The window is not only an opening between inside and outside spaces, but also an object through which one can enjoy day light and moon light. Through windows, inhabitants, psychologically stretch inside space to outside. They perceive sky, streets, and many parts of the neighbourhood that can be seen. People may dispute and sue someone who, by any means, blocks air, sun and outside view.

While for Modern apartments outside openings are only the potential value of windows, existence of inner courtyards in the Traditional house also makes openings possible toward inside. In Tables 10-5, window occupies the centre of the Traditional list; whereas, in the three Modern areas, it is recorded in the bottom. Also, Figure 10-24-Inner Window shows strong associated meaning for Traditional area and none for Modern areas (see Figure 10-28). Outer windows are recorded equally below the high level of all residential lists, and have only few strong associated meanings by all residents, as Figure 10-23-Outer Window shows. Though the outer window is recorded in the Traditional area two steps higher than the inner window; the inner window carries more meanings. Figures 10-15...10-18 show that the outer window has only two (M) meanings that are childhood and noise, and five (L) meanings that are privacy, study, ceremony, people and control; while the inner window has 7 (M,H) meanings and four (L) meanings. The inner window signifies gathering (H) a place for study (M),

childhood reminder (H) and the past (M). The view from the inner window is associated with tree branches, sky or the reflection of the sky on the calm water surface in a fountain reminding some people of heaven (L).

Despite the fact some people may enjoy sitting against the window to study (L,L,L,L), interpretation of outer windows as source of "noise" is expressed in all residential areas (M,M,M,M). Through the outer window one can observe street events. One may speak with friends, solicitors, or neighbours standing at the opposite window. "On the other side of the street, when ever I look outside the windows, I see my neighbour sitting on his balcony" one said to me. "I sometimes wonder where he is when I do not see him there", he proceeded. For this person the window reminds him of some people who he always expects to see (L,L,L,L). The story varies from one to another, but all come up with similar meanings.

Figure 10-28:

Traditional house in Old Damascus. Inner windows open onto the inner courtyard. Alsiba'i House. Photo by the author, 1991.

Lattice Window: childhood, past, religion, control, privacy, security

The lattice window is used in most residential areas to allow light to enter the house and to prevent strangers looking inside. In a conservative society, views into others' private domain is offensive. The window is a boundary where private space starts and control of outside visual interference is defined. Table 10-5 shows residents of both Traditional and Attached areas have very low interest in lattice windows, while the residents of Detached and Elevator areas equally have a little higher preference than those of Traditional and Attached areas. However, Figure 10-24-Lattice Window shows a few strongly associated meanings by Traditional, Attached, and Elevator areas and none by the Detached. Figures 10-15...10-18 show the lattice window is associated with childhood (L). For all three Modern areas, the meaning of religion is mentioned (M,L,M). In Traditional, Attached, and Elevator areas, the lattice window retains the meaning of privacy (H,H,M); and in Traditional and Attached areas, it is seen as a security device (H,M). Finally, the meaning of control (M) is mentioned only by inhabitants of the Attached area.[2]

4. Components

Design of any house first of all considers inhabitants' lifestyle and activity requirements for sitting, eating, sleeping, and cleaning. These are fulfilled by living room(s), kitchen, bedroom(s), and bathroom(s). In all residential areas, these spaces are selected with high degrees of preference, as indicated in Figure 10-1. Designating one room for a single activity is not fulfilled often. Rooms have multi purposes, as the meanings attached to these rooms indicated below.

---

[2] Noticeably, curtains may be used in combination with or without a lattice window. Curtains are easier to open and add a decorative finishing to the inside.

Living Room:	religion, gathering, study, ceremony, past, people, social, privacy, noise
Bedroom:	sacred (heaven), religion, study, people, control, possession, privacy, security

Both living rooms and bedrooms focus daily activities, thus they carry strong associated meanings by all residents, as Figures 10-23-Living Room, 10-23-Bedroom, and 10-23-Inner Room show. Different degrees of associated meanings recorded by residents of all house types can be attributed to the number of activities carried on by residents. While living rooms are used during the day, bedrooms are used during the night. Though, living rooms may be used for sleeping, day napping, eating, or studying (H,L,M,M), they also have meaning of privacy (M,M,M,M). Bedrooms may be used for study (M,H,H,H), and for holding private conversations (H,H,H,H). Living rooms may take other names relating to location, such as inner room and main room. Whatever the name for living rooms, they represent places for the family to gather (H,H,H,H), that are not controlled by one individual. On the contrary, bedrooms are allocated by parents. They contain closets for personal possession (H,H,H,H), and places where an individual controls bed and closet (L,M,M,H). Knocking at the door is expected before entering. An inside lock is provided for higher control, privacy and security (H,H,H,H). House plans of the four types of houses, shown in Chapter 6, indicate bedrooms furthest from house entrances confirming the idea of control, security and privacy. Children commonly share a bedroom.

Some periodic and seasonal activities follow winter customs, summer customs, holiday customs, and start-of-school customs. They are also marked by people's dress and use of space. Change of the room furniture, such as laying a floor mat for winter, changing curtains for special occasions, and turning off the furnace during the summer are shared activities by people in the living room (H,L,H,M), and in the bedroom (M,M,M,L).

Guest Room:	gathering, study, ceremony, past, people, social, responsibility
Main Room:	gathering, ceremony, people, past

A guest room (*Kerfet Aldoyouf*, or salon) is always demanded in the house. It is very close to the entrance, square in shape and of medium-size. Residents of all house types strongly associated a number of meanings to it (see Figure 10-23-Guest Room). In the Traditional house, main room (*Ka'a*) is another space used as a guest room. If guests are expected for a short stay, the guest room is used; otherwise, the "*Ka'a*" is more likely used. Frequent use of the *Ka'a*, besides its wonderful decoration and large size, make it one of the most preferred spaces, as shown in Table 10-5. On the other hand, competition with the guest room shifts its preference to the moderate level. In the Modern apartment, as the *Ka'a* is unknown, nobody mentioned it, while the guest room is identified to be of highest preference (see Figure 10-24-Ka'a). The guest room and *Ka'a* signify a ceremonial place (H,H,H,H). Some people in Modern houses extend the size of their guest room permanently or temporarily to look like a *Ka'a by decorating it*. Having a big guest room means being in a voluntary position to offer space to relatives and friends for weddings or other special occasions. The idea of the guest room in itself represents a social value (H,H,H,H) in Damascus. It is a separate place from the other rooms of the house. It provides separation between males and females where guests are not relatives. Memory of the activities and people (H,H,H,H) are present as inseparable meanings from time and space. The residents of Traditional areas noted the additional meaning of past to the guest room (M), while in Attached apartment settings the meaning of responsibility (M), and in Elevator apartments meaning of study space (M) are added.

(see "Kitchen", "Dining Room", "Bathroom", "Corridor" and "Entry Hall", Appendix M)

4. Other House Components

Garden/Courtyard:	gathering, study, ceremony, heaven, childhood, past, people, social
Trees/Plants:	study, ceremony, heaven, childhood, past, people, possession
Fountain:	gathering, heaven, childhood, past, people, religion
Iwan:	gathering, study, ceremony, people
Flat Roof:	gathering, study, ceremony, childhood, past, people

The house design affects the way inhabitants interact with the natural environment. Inhabitants are in direct interaction with nature through the courtyard/garden, the *Mashraka*/balcony, the flat roof, the fountain, trees/plants, and the *iwan* (see Figures 10-29,30,31). Though it is known that courtyards, *mashraka*, fountains, and *iwan* play important roles, distinguishing traditional houses from modern ones, conceptually it is not quite true. What exits in the Traditional house in one name, is referred to in Modern houses by a different name. The critical factor is the way features are synthesized: how each feature is connected and located with the other features, and how much significance such synthesis provides for users.

Evidently, gardens, trees/plants, flat roofs, and fountains, found located in private areas of Traditional houses, are found located in semi-private zones (places where non-owners' eyes can penetrate) of modern apartments. In Modern apartments, these features are also used by all residents of the building. Gardens are owned by only a few inhabitants. Concepts of convenience, control and privacy, attached to any house features, seem to be strong factors that determine the user-house-environment interaction, in addition to strengthening culture.

In open spaces, such as courtyard/garden, people gather (H,M,M,H) for many purposes, such as study (H,M,.,L), ceremony (H,M,M,H), etc.

During summer days people re-leave past memory (M,L,L,L) in this place. Memory of family and other people (M,L,M,H), of childhood games (H,L,M,H) shared with others. From the *iwan*, or garden porch there is a perspective of heaven (H,H,H,H). Trees, plants (H,H,H,H), fountain (H,L,M,M), cool air and peaceful environment is construed to be Edenic. Certainly, moving from an inner space to a private or a semi-private open space affects the way a person, whether a man or a woman, sits and behaves in the presence of others. Such behaviour represents a set of social values (H,L,L,H) of the society. The degree of preference for the inner courtyard by inhabitants of Traditional houses is very high, as shown in Table 10-5. For inhabitants of Attached and Detached apartments, the garden is ranked above the middle of the list, while for residents of Elevator apartments, it is ranked in the lower part.

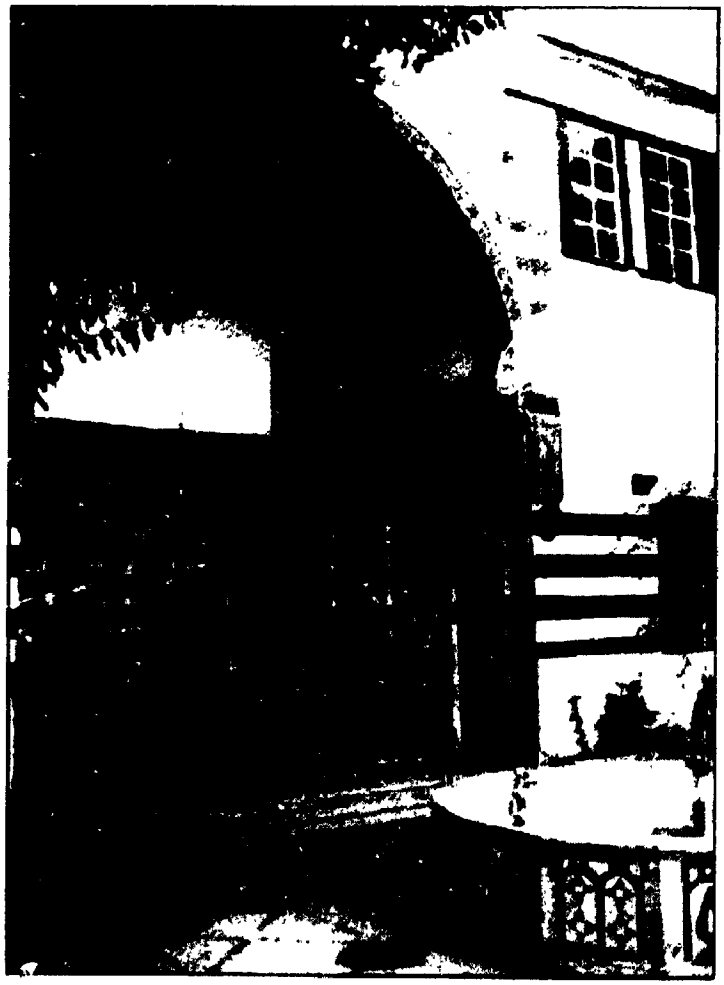


Figure 10-29:

The Iwan is part of the inner courtyard. The northern opening makes it a continuously shaded place, and so an ideal summer living area. Alshiba'i House. Photo by the author, 1991.

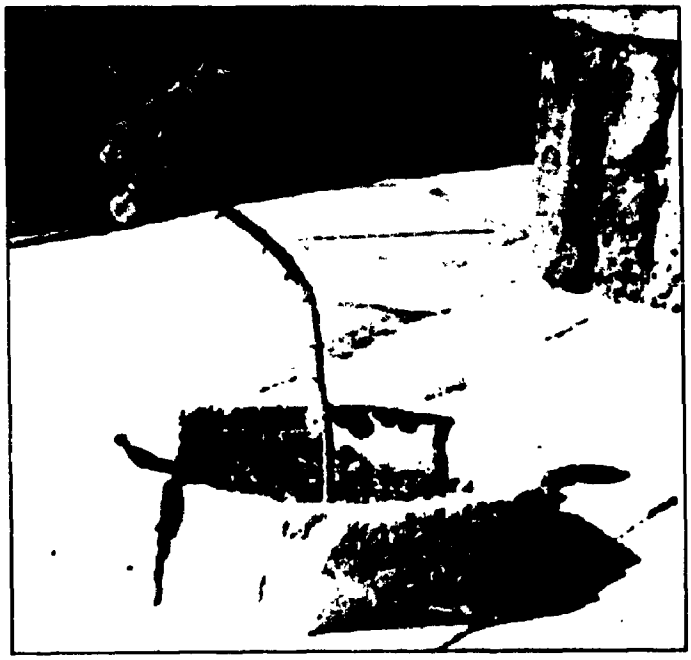


Figure 10 30:

Plant in the inner courtyard. "It grows with us". Alsiba'i House, Damascus. Photo by the author, 1991.

Figure 10-31: Fountain inside an inner courtyard. On a calm day, the water surface reflects the sky, soaring birds, and the surroundings, combining heaven and the garden in one view. Alomari House, Damascus. Photo by the author, 1991.

Explanation of the factor that generates meanings for the garden and the inner courtyard can be applied to explain meanings that people attribute to trees/plants, *iwan*, flat roof, and fountain, but the degree of associated meanings are different. First, trees and plants have meanings of study times (M,L,L,L), ceremonies (L,L,M,L), religion (L,L,M,L), childhood (L,L,M,L), past (M,L,M,L), people (M,L,L,L), possession (L,L,L,L). Second, the fountain has meanings of family gathering (L,M,.,L), childhood (M,M,.,M), past (M,L,L,.), people (L,M,L,.), religion (M,M,.,M). Third, the flat roof has meanings of gathering (M,L,.,L), study (H,L,M,L), ceremony (L,H,M,L), heaven (L,L,L,L), childhood (H,H,H,H), past (L,M,M,H), and people (L,M,M,.). Finally, meanings of the *iwan* are limited to residents of Traditional houses. These meanings are: family gathering (H), study time (M), ceremonies (M), and people (M).

In addition to the previous meanings, flat roofs mean noise (L,M,L,L), and trees/plants mean possession (L,L,L,L). The meaning of possession, attached to plants or trees, is known to most of us from the time one enters school. In Biology class young students are taught to try to grow plants at home. "In a small plot, put a piece of wet cotton, and on the top of it put some grain seeds. Leave it near the window and observe what will happen within a week". This experiment teaches love for plants. Though there is in the house a person who takes care of plants and trees (such as the grandmother), everyone enjoys their beauty and links their meanings to the garden of Eden.

Activities that occur on the flat roof can be easily heard inside the house. In Attached apartments, lack of thick, noise-proof ceilings is a problem.

Table 10-5 shows tree and plant, as favoured features, ranked highly most consistently in the four residential areas. Second, the fountain is

ranked in the centre of the Traditional list, and at the bottom of the three modern lists. Third, the flat roof, Like the case of the inner court-yard/garden, is highly ranked in the Traditional list, and below the centre of both Attached and Detached lists. In the case of the Elevator area, the flat roof is ranked low. Finally, the *iwan* is ranked low in Traditional areas; while in the three modern lists, it has 0 or a very low value. See Figures 10-23-Garden, 10-23-Tree, 10-23-Flat Roof, 10-23-Fountain, and 10-24-*Iwan* for the number of strongly associated meanings for garden, trees, used roof, fountain, and *iwan*.

Balcony: gathering, study, heaven, childhood, past, people, noise

Mashraka: private, gathering, study, childhood, social

Balcony is an important feature in modern houses (see Figures 10-32,33). It is the only place for upper floor inhabitants to be in direct contact with outside, while maintaining some privacy (L,L,L). Year round, for many people, the balcony is the favourite place. Some people sleep there during hot summer nights, have their dinner, study (H,H,H), or gather (L,H,M) with other family members. Past memories (L,M,M) related to people (M,L,H) with whom one has associated as an adult and in childhood (M,H,H) combined with the balcony as a place to watch people on the street stage. The scene changes at different times of the day. For example, the mixture of noise (L,M,M) coming from passing cars, children playing soccer, or conversation of strollers decreases with approaching darkness. Families watch the sun set, or silent dark shapes of buildings punctuated by electrical-lights of houses while enjoying their coffee. "Glory to God" one says while expressing the heavenly beauty (L,M,M) of nature and her surroundings. Balcony, as shown in Table 10-5, is expressed as a high preferred place by inhabitants of the three Modern apartment types. Also, as shown in Figure 10-23-Balcony, all residents strongly associated meanings with the balcony/*mashraka*.

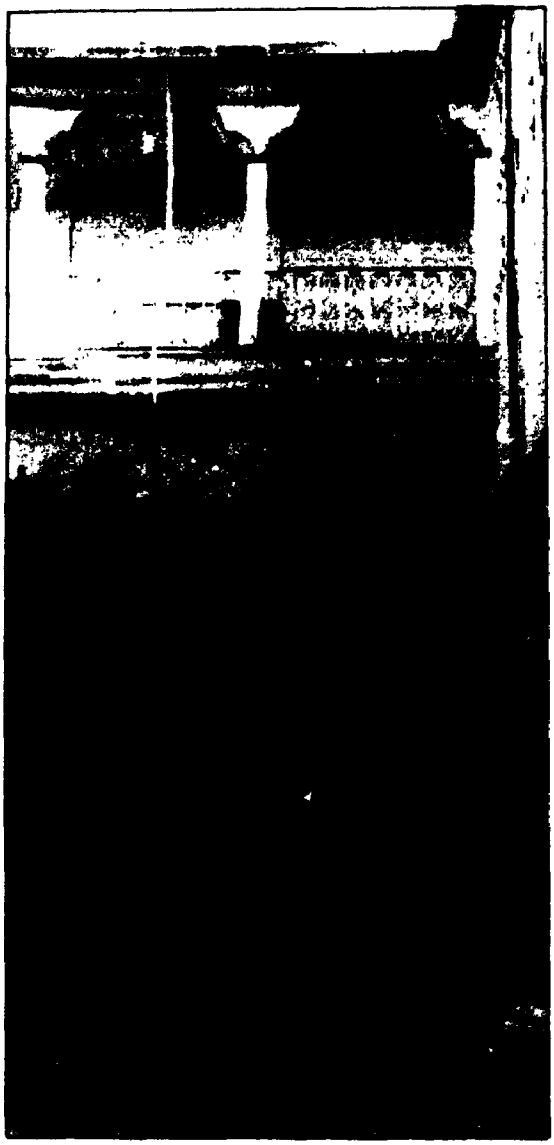


Figure 10-32:

The Mashraka, in the upper floor of a traditional house, has an inside orientation and privacy. Alomari House, Damascus. Photo by the author, 1991.

Figuure 10-33:

Balconies in an elevator apartment building oriented towards the street and have low privacy. The glazed balconies are either maintain privacy or have been transformed into additional rooms. Aladawi Quarter, Damascus. Photo by the author, 1991.

In Traditional houses, the *mashraka*, analogue to the balcony in Modern apartments, does not seem to be that important. This is because of its co-exitance with the inner courtyard, the stronger competitor. the inner courtyard has cooler air, and is more convenient since it has a place for everyone of the family to enjoy, whether near the fountain, under trees, or inside the *iwan*. Table 10-5 shows the *mashraka* is ranked below the middle of the list, whereas the inner courtyard is ranked at the top. However, the *mashraka* is still an attractive spot for family to gather (H) while the children play around (M). Students found this place quiet enough for study (H). All the beauty of the inner courtyard can be watched from the *mashraka*, that is located in the second floor by the sleeping wing. Such location gives the *mashraka* the meanings of privacy (M), a social value (M). Any type of activities that creates noise (L) in the *mashraka* would bother sleepers. On the contrary, the courtyard is located off the living wing, where noise of cats, birds, children, and talk are not considered noisy.

Summary

When people were asked to select their most preferred house features to talk about, they left out some cards. This could be a result of stronger competitive house features, being unseen or unused frequently, or non-existent features in their surroundings.

The meanings that are attached to every house feature appear to be related to inhabitants' frequency of interaction with them. Two conditions can be concluded from the previous discussion. First, while discussing the meanings of house features, it shows that whether in the Traditional house or in any of the three Modern apartments, the observed features always carry meanings, and these meanings increase with the multi use of the space. Second, the design of the Traditional house uses some features not observed in Modern apartments, and have more

features than Modern houses to interact with, and thus, more meanings. As a result, the Traditional house presents more semantic signs than the three other Modern apartments.

10-7-2. Associated Meanings with Neighbourhood Elements

Different syntheses of urban elements have produced four types of residential areas (Traditional, Attached, Detached, and Elevator). The issue is whether or not peoples' interaction with these built environments is different. Differences are evident in the preferred elements that inhabitants like to talk about, as showed in Table 6; and inhabitants' perceived meanings of these urban elements, as shown in Figures 10-19...10-22. The organization of the following discussion will be according to these main headings:

1. Neighbourhood
2. Commercial Areas
3. Public Buildings
4. Streets
5. Other Characteristics

1. Neighbourhood: ceremony, childhood, information, pollution, noise, students, youth, adults, bad people, solicitors, untidy,

Neighbourhood is consistently regarded as a "big home" for inhabitants. Once its border is reached (as personally defined), he/she has the feeling of relaxation (L,L,L,L); an expectation to meet some familiar people (L,L,L,L) with whom he/she can gossip (L,L,L,L) and gain information (M,M,M,M) about happenings in the area. Streets of the neighbourhood are stages on which neighbours and visitors interact, or play and observe each other. On these stages activities carry memories of school children (M,M,M,M) with their uniform moving in a noisy crowd mixed with solicitors' cries (H,M,M,M) to sell their merchandise (see Figure 10-34). Youth (M,M,M,M) and children (M,M,M,L) crowd (L,L,L,L) during the afternoon to "kill time": playing games, talking, or sitting on steps of stairs and buildings to watch pedestrians. Some describe these youth and

children as bad people (M,H,H,M), because they use street language and make the street untidy and dirty (M,M,M,L). Untidy and dirty neighbourhoods may be burdened by pollution (M,M,M,M) and noise (M,M,L,L) from vehicle exhausts.

As good or as bad as it is, the neighbourhood represents an expression of public events that reach a peak during holidays, national anniversaries, and "*arada*" (a crowd of male adults who gather the night of a wedding ceremony of friends and relatives to accompany the groom to where females celebrate the event with the bride). There are many other events related to the neighbourhood environment. Overall, the neighbourhood is a product of human activities that mix machines, animals, nature, concrete, light, and colour; such mixtures and their transformations (presentations and ambience) distinguish human built environments from others.

2. Commercial Areas

Strip Commercial: drink, hunger, ceremony, childhood, past, time, relaxation, gossip, information, knowledge, cigarette, pollution, crowd, noise, meeting, students, youth, adults, bad people, solicitors, spend money, symbol, landmark, tidy, untidy

The *Suk* is a commercial strip that symbolizes (M,M,L,L) the Traditional commercial area. It is full of different kinds of shops, such as greengrocers, butter merchants, butcher shops, restaurants, and bakeries, that evoke many meanings (see Figure 10-25-Strip Commercial). It is crowded (H,H,H,H) most of the time. People move shoulder to shoulder, gather in front of greengrocery shops to bargain, weigh products, and pay money (spend H,H,H,H). Greengrocers usually use most of the sidewalk beside their shop to exhibit products (see Figure 10-35). "The first time I went to the *suk* with my father", an old man said to me, "it was an unforgettable memory of my childhood (M,H,M,L)". I was afraid of getting lost, how could I move between the crowded goods and people, and if I got

Figure 10-34:

Solicitor selling green pistachio nuts in a semi-public street. Alkarab, Old Damascus. Photo by the author, 1991.

Figure 10-35:

Crowded traditional strip commerical street. People of different ages and gender congregate spot in the Suk. Suk al-Jemah, Damascus. Photo by the author 1986.

lost, how I could get back home by myself. So I kept my hand tight with my father's and fixed my eyes at him".

Friends meet (M,H,L,M), gossip (H,L,L,M), and gain information (M,L,L,M). Visiting the strip commercial area is likely to make one feel thirsty (drink M,M,M,L), and feel hungry (H,M,H,H), by sights and smells of food. The *Suk* also is full of noise (M,M,H,H), and is polluted (M,M,M,L). At the outset of a day's activities, the *suk* is tidy (M,M,M,L) and clean, and by the end of the day is untidy and filled with refuse (H,M,M,L).

Table 10-6 shows that those who live in the Traditional and the Attached areas, close to the *suk*, are less disposed to talk about the market than those who live in the Detached and in the Elevator areas, far from *Suks*. This could be a negative reaction of those who are close to continuous noise and crowds that cause over exposure to information experienced there. Continuous exposure to noise is disturbing, but periodic visit to the *suk* is an attraction for people who enjoy momentary excitement. The experience may be analogous to attendance at a sport game where crowds and excitement are occasionally sought, and where people do not feel bothered by the short term noise (Altman, 1980).

Plaza/Central Commercial: hunger, childhood, time, religion, information, cigarette, pollution, crowd, noise, students, youth, adults, spend money, symbol, landmark, art, tidy,

Centralized commercial areas occur in both old and new residential areas, but with different patterns and at different scales. In the old one, the central commercial area is a "bazaar" (a mega-structure), consisting of a combination of *suks*, each of which specializes in one kind of merchandise. In the new residential areas, especially in Elevator neighbourhoods, commercial areas take the form of super markets or

shopping plazas. Its typical form consists of a square-shaped building surrounded by a number of residential apartment buildings (see Figures 10-36,37). The first floor shops are similar and face outward, there are three steps above street level. This provides space for small windows in basement storage areas. Second floors are allocated to residential apartments. The shopping plaza is a landmark in the area (H,L,L,M). It supports daily needs of residents in adjacent buildings. Typically, it has a variety of shops such as a butcher, greengrocer, butter merchant, fast food restaurant, pharmacy, flower store, electrical appliance repair shop, and others.

Proximity to residential buildings, centralized commercial area gains popularity over the strip commercial area, as shown in Table 10-6. In the case of Detached and Elevators neighbourhoods, centralized commercial activity is ranked high, while in Traditional and Attached cases, it has middle rank. However, the attached meaning with central commercial area is high in all cases, but in different numbers -- see Figure 10-25-Central Commercial. Detached areas recorded less strong association than other residential types. Feelings of hunger (H,H,H,H) and spending money (H,H,H,H) are associated with central commercial areas. The meaning of time (M,M,M,L) is associated with opening and closing of shops. Time is also signified by changes in crowd volume in front of the shops. The centre is busy during noon or afternoon with youth and school children who crowd (H,H,M,H) in front of the tidy plaza (M,H,H,H). Behaviourial patterns of customers give other meanings to the centralized commercial area: customers light cigarettes (M,M,L,M), shopkeepers provide information (.,L,L,H) about the neighbourhood, and so on.

(see "Grocery Store", "Butcher Shop", "Bakery", Fastfood Restaurant", "Clinic", "Pharmacy", "Coffee House", and "Public Bath", Appendix N)

Figure 10-36:

Plaza (central commercial area) within an Elevator neighbourhood. A two story building which distinguishes it from surrounding tower buildings. Aladwai Quarter, Damascus. Photo by author, 1991.

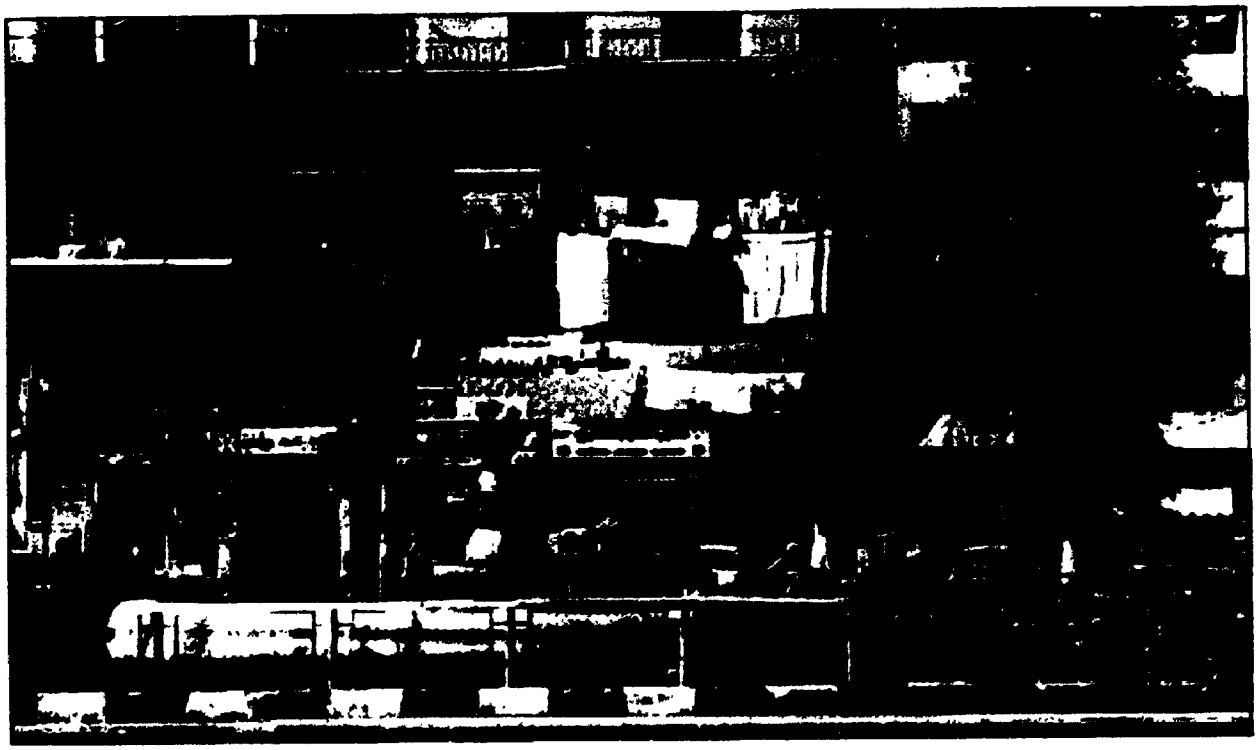


Figure 10-37: A central commercial area in a public street of a Detached neighbourhood. It occupies the first floor of these residential buildings. Alkassah Quarter, Damascus. Photo by the author, 1991.

3. Public Buildings

School: hunger, childhood, past, time, knowledge, crowd, noise, meeting, students, youth, landmark, untidy

For all residents, as shown in Table 10-6, and Figure 10-25-School, schools are the most favoured urban elements. Schools are located in every residential area representing four educational levels: Kindergarten, elementary school, secondary school, high school. Their distinctive architecture (L,M,M,M), especially in Modern residential areas, makes them landmarks. In the traditional areas, schools mostly occupy old houses; however, they are still good landmarks by the signs as educational centres, or knowledge-gaining places (H,H,H,H). Student crowds in the street are signs of school, and densities increase in the vicinity of schools. Student crowds (L,L,M,L) are also signs of time (M,M,L,M) of day (see Figures 10-38,39). Students converge at school doors by 7:30am, and diverge after dismissal at 1:30pm. Other schools have morning attendance from 7:30am to 12:00pm and afternoon attendance from 12:30pm to 5:00pm.

School students, whether children (H,H,H,H) or youth (M,M,M,M), crowd streets, moving as single individuals and in groups. This evokes memories of childhood (M,M,H,M) and past (M,H,H,M). Some students hurry home hungry (L,M,M,L,), while others buy snacks, or surround solicitors who always sell "*Balila*" (or chick peas), "Foolnabet" (or fafa beans), and other light food. They leave the school untidy and dirty (L,L,M,L). Students of different levels of education have distinctive street behavioural patterns. For example, the youngest students play close contact games, older youngsters bicycle, and senior students congregate in groups.

Figure 10-38: Students, identified by school uniforms, crowd in streets after dismissal from school. Alsferjelani Street, Old Damascus. Photo by the author, 1991.

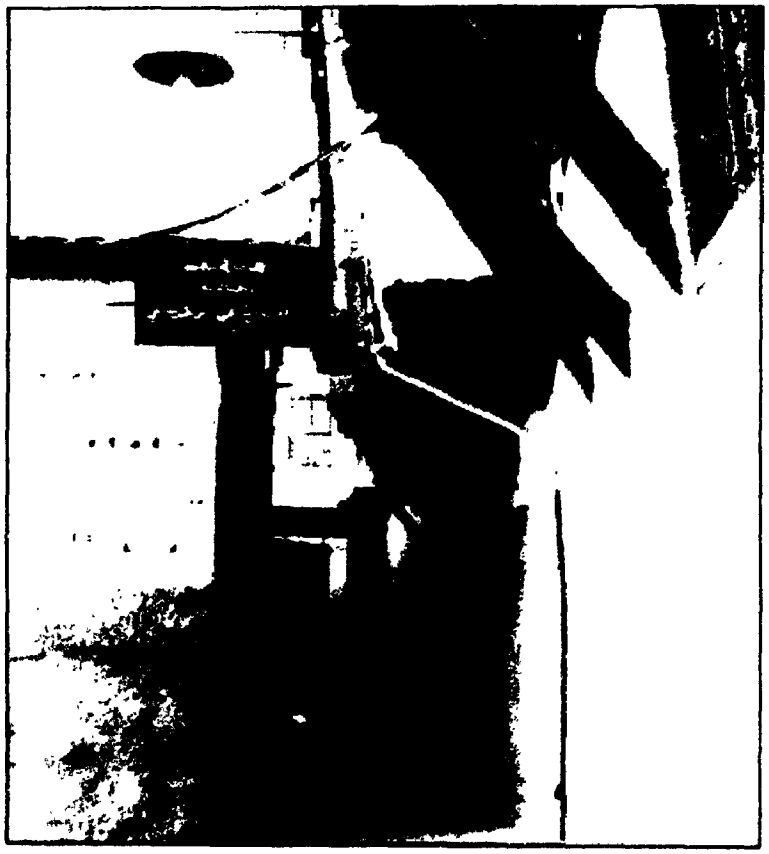


Figure 10-39:

The school sign makes it possible to spot the secondary school that occupies a Traditional house in Alkarab, Old Damascus. Photo by the author, 1991.

Mosques:	drink, ceremony, heaven, God, religion, time, relax, knowledge, crowd, meeting, adult, symbol, landmark, art, tidy
Minaret:	heaven, God, religion, time, knowledge, relax, meeting, symbol, landmark, art, tidy
Dome:	ceremony, heaven, God, religion, childhood, past, time, knowledge, crowd, youth, symbol, landmark, art
Arch:	ceremony, heaven, God, religion, past, time, symbolic, landmark, art,

Mosques are places where people visit, if not daily then weekly. They are located close to residential and working places (see Figures 10-40,41). With their symbolic features (H,H,H,H), minarets, domes, and arches, mosques attract pedestrians' attention, and become part of memory as landmarks (H,H,H,H) (see Figures 10-25-Mosque, 10-25-Minaret, 10-25-Dome, 10-26-Arch). In front of the distinctive mosque and artistic architecture (H,H,H,H), pencil shape minarets direct the beholder's eyes skyward, symbolizing God (H,H,H,H), and Heaven (H,H,H,H).

Mosques are highly favoured elements by residents of all neighbourhood areas, but especially by residents of Traditional neighbourhoods. This likely reflects the strong tie between social patterns and religious significance (H,H,H,H). Mosques were built around 660 A.D. the first one called "*Kobah*", that the Prophet Muhammad (peace be upon him) built. The "*Kobah*" mosque was used as the headquarters for Muslims, thus, being multi-functional. Adults, youth, and children go there to gain religious knowledge (H,M,H,H) and also secular knowledge. Mosques are places for relaxation (H,H,H,H) and comfort inside the cool, peaceful prayer hall. People may go five times (H,H,H,M) a day there to pray and meet (L,M,L,L) others. Friday-noon prayers, or during occasional ceremonies (L,M,.,L), mosques receive the biggest crowd (M).

Figure 10-40:

Altiftafia mosque in a Traditional neighbourhood. In such a narrow street, the minaret becomes close to its beholders. Altiftafia street, Old Damascus. Photo by the author, 1991.

Figure 10-41:

Almansor mosque in an Attached residential area. It stands by its minaret and dome as a landmark seen from afar, and used as a reference point. Almansor, Damascus. Photo by the author, 1991.

As a landmark or a focal point, the minaret can be seen from different parts of the neighbourhood. Even large elevator apartment buildings have mosques, but they are often hidden from easy view. Modern architecture dominates sight lines and sky lines. Inhabitants of Modern parts of the city are less likely to discuss minarets than those in the Traditional areas. This is attributed to location of mosques in relation to other buildings and street axes. Sites selected for mosques in Traditional and Modern areas use two different principles: 1) mosques as initiation elements in Traditional areas (e.g., al-Midan), and 2) mosque as subsequent element in Modern areas, the land-use follows the master plan with mosque site accomplished by inhabitants after primary neighbourhood development. Selection of sites for mosques in the Modern area is confined to remaining land. Mosques are less prominent, and their main features of minarets, arches, and domes less conspicuous.

Contemporary meanings of minarets, arches, and domes is the same of that of the traditional mosque, so it is sufficient to indicate the degree of their associated meanings in respect to inhabitants.

Minaret: heaven (H,H,M,H), God (H,H,H,H), religion (H,H,H,H), time (M,M,H,H), knowledge (L,.,M,.), relax (M,.,L,.), meeting (L,L,M,.), symbol (H,M,M,M), landmark (L,M,H,.), art (M,H,H,H), tidy (M,M,H,L).

Dome: ceremony (L,M,.,M), heaven (L,H,H,M), God (H,H,H,H), religion (H,M,H,H), childhood (H,L,.,.), past (.,M,.,.), time (.,L,M,.), knowledge (L,.,M,.), crowd (H,.,.,.), youth (.,L,.,M), symbol (H,H,H,H), landmark (H,L,M,H), art (H,H,M,M,).

Arch: ceremony (L,L,M,L), heaven (.,.,H,.), God (.,.,M,.), religion (.,.,M,.), past (.,.,M,L), time (.,.,L,L), symbolic (L,M,H,L), landmark (.,.,M,L), art (.,.,H,L).

Drinking Fountain: drink, heaven, God, religion, past, youth, symbol, landmark, art, tidy

Streets in old Damascus are ornamented by drinking fountains. Mainly they are found attached to mosques or close to street corners. It was

common practice for people to build drinking fountains in their search for reward from God (M,M,L,H). Plaques above drinking fountains that tell who built them and when. Drinking fountains in Traditional areas are deteriorating fast, as recently, restoration is poor. Only a few water fountains are in a good shape. In the modern areas, water fountains are built always on fences or exterior walls of mosques, so minarets are used as visual signs to locate water fountains (see Figure 10-42). Table 10-6 shows that in Traditional areas, the drinking fountain scored a high value, ranked in the fourth order. In both Attached and Detached areas, the drinking fountain has a similar high ranking; but in the Elevator area, it is ranked quite low.

Figure 10-42:

Drinking fountain in an Attached neighbourhood. It is built as part of the wall of Almansor mosque. Almansor, Damascus. Photo by the author, 1991.

The scale of streets differs among the four residential areas. Larger scale streets are found in Elevator neighbourhoods. Considering distance, people have limited ability to perceive and understand their surroundings. The closer on to a design features, the more likely one is to interact with it. Thus, differences in popularity of the drinking fountain among the four residential types can be attributed to the street-scale-factor.

The "Drinking fountain" is a useful sign to examine social-religious effects on the built environment. Along 300 metres of the modern part of *al-Midan* street, as recorded by the author in summer 1991, there were three new privately constructed drinking fountains on residential building fences. Such a change proposes the question, "what else can be modified or added to the modern built environment as a reflection inhabitants' lifestyles and socio-religious beliefs?

The presence of the drinking fountain not only stimulates one to drink (H,H,H,H), but also activities other meanings (see Figure 10-25-Drinking Fountain). These meanings can be looked at in two groups. 1) those related to form, and 2) those connected to spiritual images. Form incorporates past decorative elements (L,L,L,M), such as the geometric decoration to symbolize the traditional beliefs through architecture (H,M,M,H). Also, as an artistic form (H,M,M,H), the drinking fountain serves as a landmark (M,L,L,H). Meanings associated with spiritual images are the reminders of God (M,M,L,H), Heaven (M,M,L,L), and religion (L,H,.,.). God's saying in the Quran, "And Their Lord gives them clean pure water" is written over the tap on a plaque.

(see "Library" and "Museum", Appendix N)

4. Streets

Public Street:	drink, ceremony, heaven, childhood, time, relax, cigarette, pollution, crowd, noise, students, youth, solicitors, bad people, landmark, art, tidy, untidy
Semi-Public Street:	drink, hunger, childhood, past, time, knowledge, pollution, crowd, noise, students, youth, solicitors, symbol, art, tidy, untidy
Semi-Private Street:	drink, childhood, past, time, gossip, information, crowd, noise, meeting, students, youth, bad people, solicitors, symbol, landmark, untidy
Pedestrian:	childhood, past, time, relax, pollution, noise, students, youth, bad people, untidy

The street network is the veins through which people (as energy) move to conduct their activities: going to work, to shop, to school, to visit others, and to attend the mosque, etc. All these activities are basic to the city pulse. The street network in any of the four residential areas is divided into three types of spaces: 1) public, 2) semi-public, and 3) semi-private. Streets may be partially or completely covered, as in *Suk Alhamadia* (see Figures 43), or open. It always has a sidewalk, but in some cases, streets are used only by pedestrians, as in *Alsalihia*.

These street types have strongly associated meanings that reflect activities found in them (see Figures 10-25-Public Street, 10-25-Pedestrian Road, 10-25-Semi-Public Street, and 10-26-Semi-Private Street 77,78,79,80, and Figure 10-43). The absence of semi-private streets in Detached neighbourhoods is marked by very few associated meanings. Tables 10-6 shows that in the Traditional area, the semi-public street is ranked as one of the most preferred elements; it is ranked higher than the other street types, whether in the Traditional or in the three Modern neighbourhood lists. In Detached areas, the public street is ranked higher than any other street type in the same list. Also, the public street is ranked higher than any other street type in both urban element lists, the Attached and the Elevator, though it is located in the middle of these lists.

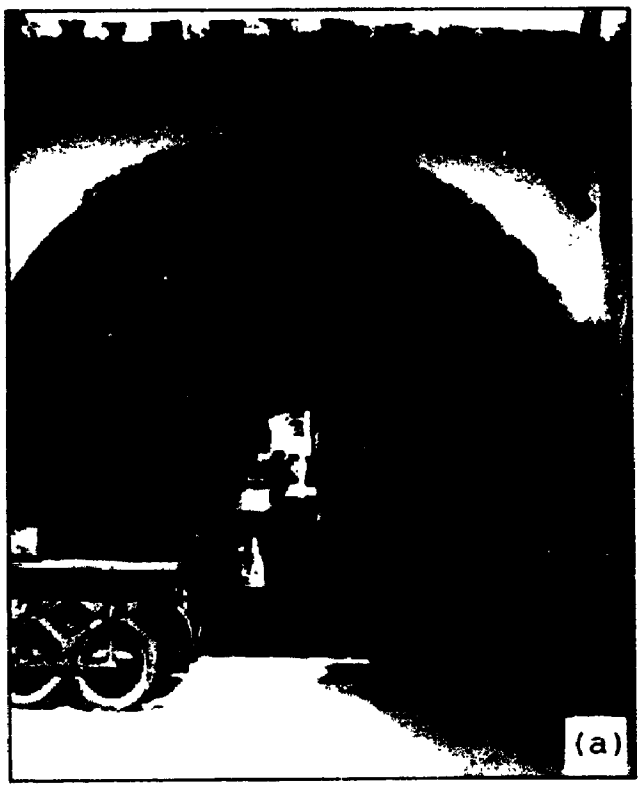


Figure 10-43:

Three different street types:

(a) A semi-public street in a Traditional neighbourhood. Sibat, a room over the street, provides shade to pedestrians. Old Damascus.

(b) A semi-private street in a Traditional area. It is narrower than the semi-public street. Old Damascus.

(c) A pedestrian road in an Elevator neighbourhood. It is one level (no lane for vehicles). Some people use it to park their cars. Aladwai Quarter, Damascus.

Photos by the author, 1991.

Being full of dead-end streets, and being designed for pedestrian priority, the old city was called the pedestrian city. This circumstance is changing. Cars are found in many dead-end streets. Dead-end streets also lose value as semi-private spaces when rooms of some houses are rented for families or are used for storage purposes. Changes in the social and functional structure of old houses reduces importance of semi-private/pedestrian roads for the inhabitants. Thus, their value as semi-private/pedestrian roads proved low.

In each of the four residential areas, both semi-private streets and pedestrian roads are very close in rank. Looking at the semi-private street and the pedestrian road as a pair, both are ranked relatively low by residents of Traditional, Attached, and Detached areas. They are ranked by residents of Elevator areas in the centre of the list; being ranked higher than they are in the other two modern lists (A,D). This may be related to higher intensity in Elevator neighbourhoods than in the other two Modern neighbourhoods, as shown in Chapter 5.

Regarding meanings of streets, Figures 10-19...10-22 show there are few meanings shared by occupants of the four residential areas, because each has its own pattern of usage. Though public and semi-public streets share two strong objective meanings: there are places where children gather and play, and they are polluted. The degree of the associated meaning of pollution with the public street is (H,H,H,H), and in the semi-public street it is (M,H,L,H). The degree of associated meaning of childhood with the public street is (H,H,L,L), and in the semi-public street it is (M,M,H,M).

Noticing people's crowdedness in the public street is inescapable (H,M,M,M). Crowdedness changes in volume according to time of day (L,L,H,M). People move quickly when they go to work and school (H,H,M,M);

however, when people seek relaxation and enjoyment (from 5pm-8pm) they move slower. The environment of the public street is a mix of crowds, streetscapes, shops, hot sun, vehicles, pollution, and noise (M,H,H,M). Those tired of the street seek cool refuge, a peaceful place, and refreshment (drink, L,M,H,M). With the call for prayers from minarets at noon, afternoon, and dawn, some people remember God (L,L,L,L), and find their refuge from the street inside the mosque, or go home.

As shown in Figures 10-19...10-22, the number of associated meanings of semi-public streets in Traditional areas is more than the number of associated meanings in the three Modern areas. Meanings of the semi-public street in the three Modern areas are: school students (H,H,M), children (M,H,M), time (L,M,M), pollution (H,L,H), noise (M,L,L), youth (L,H,.), bad people (L,L,M) and solicitor (M,L,M). In Traditional areas, some associated meanings of the semi-public street are similar to those indicated previously about the public street, but with different degrees of intersubjectivity. Unmentioned meanings are: hunger, past, knowledge, symbol, youth, art, tidy, and untidy. All these meaning have an (M) degree of intersubjectivity, except for the meaning school student, that has an (H). Attachment of all these meanings is an indication of the richness of traditional semi-public streets, where people experience a variety of signs.

Meanings of semi-private streets for all residential areas are: drink (H,H,L,L), children (H,H,L,L), youth (M,M,M,M), and solicitors (M,M,L,L). Other meanings referred to by residents of elevator areas are: school students (M), information (M), gossip (M), crowed (M), noise (H), meeting (M), and symbolize the Traditional area (M). Semi-private streets are important places for outdoor activities in Elevator areas. Semi-private streets are not found in Attached and Detached areas (see "stairs", and "fence", Appendix N).

In the Traditional area, all dead-end streets are also pedestrian roads. Some semi-public streets have pedestrian roads, where cars can not enter. Three meanings are Attached to pedestrian spaces: drink (H), time (M), and youth (M). In the three Modern areas, intersubjective meanings for the pedestrian road are: school students (M,M,M), children (H,M,L), noise (M,.,M), young (M,L,M), and untidy (M,L,M). In Elevator areas, two other meanings are associated with pedestrian roads: past memory (M) and bad people (H). Wherever there are activities, memory of the past should be considered. Without evidence of the past people would not be able to associate meanings or even imagine the sign. So, even though the meaning "past" was not picked up by interviewees of Attached and Detached areas, it is assumed that the meaning "past" is implicit.

Walking through the old streets, there is extensive use of partially covered streets. Cover of streets is created either by building rooms over narrow streets, or by constructing metal covers along them. Partially covered streets are found in semi-private and semi-public streets located in residential areas; while the metal-covered streets are found in commercial areas with the height of 7 to 10 metres, as in *Suk Alhamadia*. In modern areas, there is no equivalent to these types of covered streets.[3] The low score of covered streets in Traditional areas could have resulted from by the difficulty in differentiating streets from semi-public and semi-private streets. In all modern areas, covered streets are not preferred. Do designers need to consider this factor and evaluate designs to encourage use of covered streets to protect pedestrians from the hot sun of this arid region? However, significance of the covered street may not be reliable since the number of people selecting it is very small (2,1,2,0).

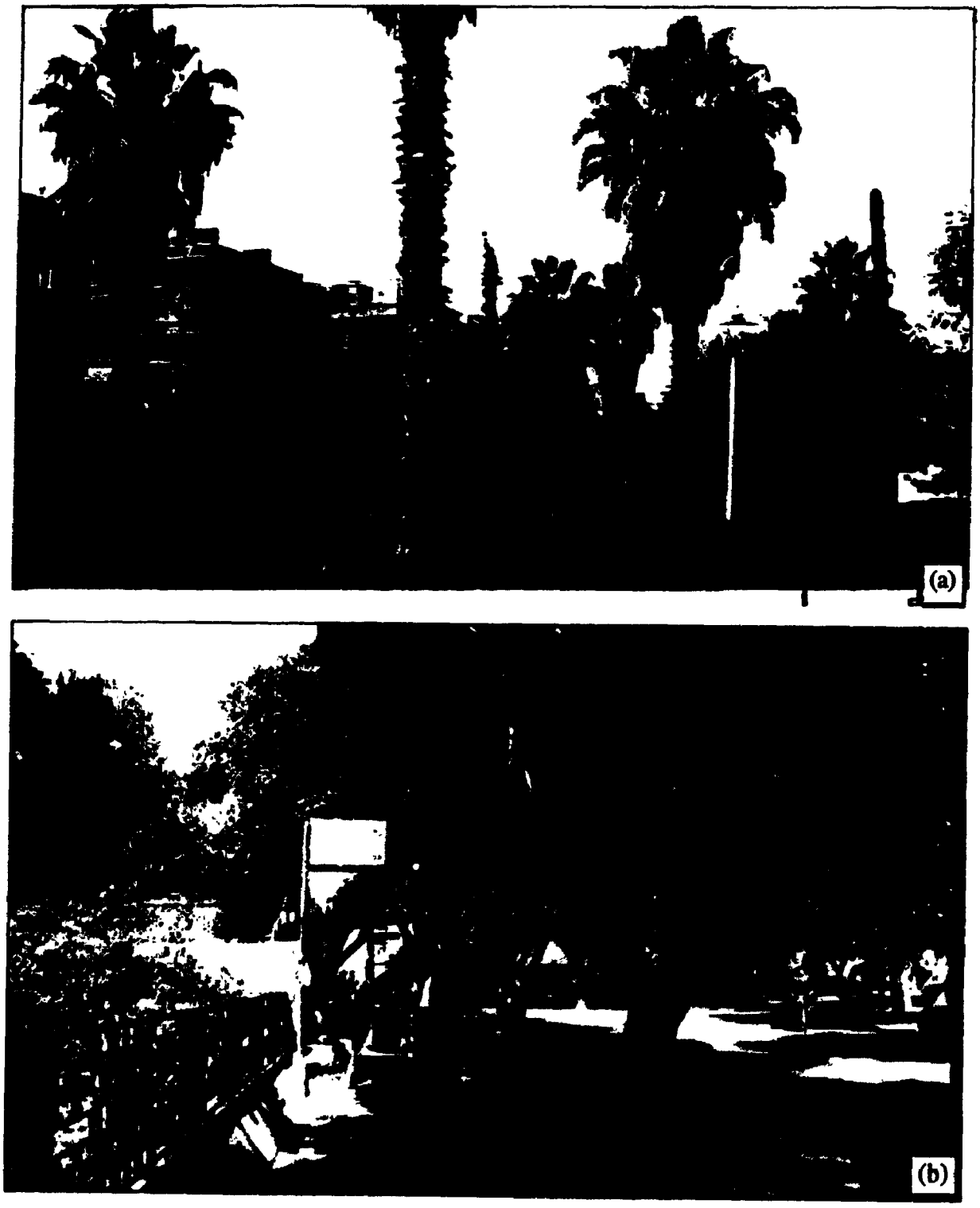
[3] The South Circle of the High Way in *al-Midan* provides a case of a covered street, but it is still under development, so it did not affect the results of this research.

5. Street Characteristics

Parks and Trees: drink, hunger, ceremony, heaven, God, childhood, past, time, relax, gossip, cigarette, crowd, noise, meeting, students, youth, bad people, spend money, landmark, art. tidy,

Inspection of the four maps of residential areas in Chapter 2, provides evidence of 1). lack of parks in the Traditional area, 2). moderate presence of parks in both Attached and Detached areas, and 3). intensive presence in the Elevator area. Similarly, outdoor trees are found in all three modern areas, where parks, sidewalks, and street islands make it possible to plant trees to provide shade for pedestrians (see Figures 10-44). Visually, trees also reduce the apparent size of open spaces and beautify them. Thus, it is not surprising to find that parks and trees have higher ranked preference for residents of modern areas than for residents of traditional areas. Strongly associated meanings with trees show similar results to preference of signs regarding parks, as all residents, even of Traditional areas, have many strongly associated meanings (see Figure 10-25-Park and 10-26-Tree).

Parks are places where people go to enjoy nature, relax (H,H,H,H), and meet others (H,H,H,H). People crowd (M,H,H,H) in the shade and relive the past (M,M,M,M) and their childhood (H,M,M,H). Since parks are used mostly for relaxation and enjoyment, people like to drink (M,M,H,M) and eat (hunger L,M,L,H). Peddlers take advantage of this and stroll among youths (H,H,H,H) who love to buy junk food (spend money M,M,L,L), such as "Termos" (cooked peas, easy to skin to eat the inside, though it has a sour taste). Also, some young men follow with their eyes the strollers while smoking their cigarettes (M,L,.,L). By making others feel uncomfortable, these young men are considered bad people (L,L,M,M).



Figures 10-44: (a) A small park and (b) a sidewalk in a Detached neighbourhood. Trees provide shade and break the width of the street. The garden of the residence adds a green touch to the streetscape. Iben Kotiba Street, Damascus. Photos by the author, 1991.

With the change of seasons, trees blooming and leaves falling mark the time of year (.,L,.,L). The change of trees reminds people of God, the creator (H,M,M,H), and heaven (L,M,H,H) described as the garden of Eden. Trees of different species and appearance, may be used as landmarks (L,L,L,L). "My house is located on the left side of two big pines trees". People used to decorate their buildings with branches and palm leaves when pilgrimaging to Mecca. Even though the government restricts cutting trees people still do so. It is now much less common to use trees branches for such occasions, but for some people, trees are reminders of ceremonial activities (L,M,L,L).

Parking Lots: ceremony, childhood, past, relax, gossip, pollution, noise, students, youth, adult, tidy

Semi-public streets in Old Damascus were constructed to allow a loaded horse (or camel) and a pedestrian to pass at the same time. Use of motor vehicles does not fit most Traditional streets, especially semi-private and semi-public streets. The main problem in Old Damascus is finding a parking space. Thus, intersections and abandoned land are often used for parking. This makes strolling through streets less pleasant. Pedestrians squeeze between parked cars, and stand on their toes to let other car pass. In addition, there is noise and vehicle pollution. In Table 10-6, parking lots are ranked at the bottom of preferred elements by people in Traditional areas (see Figure 10-26-Parking Lot).[4]

In Attached and Detached residential areas, both sides of semi-public and semi-private streets are used for parking. Originally, every building was provided with one covered garage. Instead, covered garages are always converted into variety stores (see Figures 10-45 and 10-46).

[4] For Traditional areas, as mentioned above, the list is not reliable. However, mention of parking lots in the three Modern areas can be considered a good generalization for Traditional areas, since all of these areas share common societal behaviour.

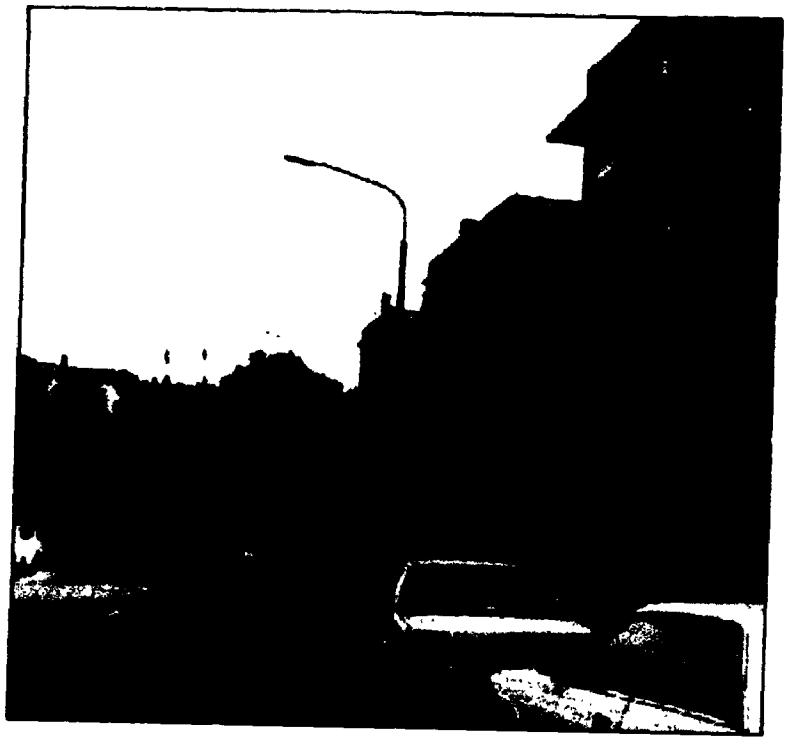


Figure 10-45:

Residents of Detached neighbourhood use the semi-public street for parking. Iben Kotiba Street, Damascus. Photo by the author, 1991.

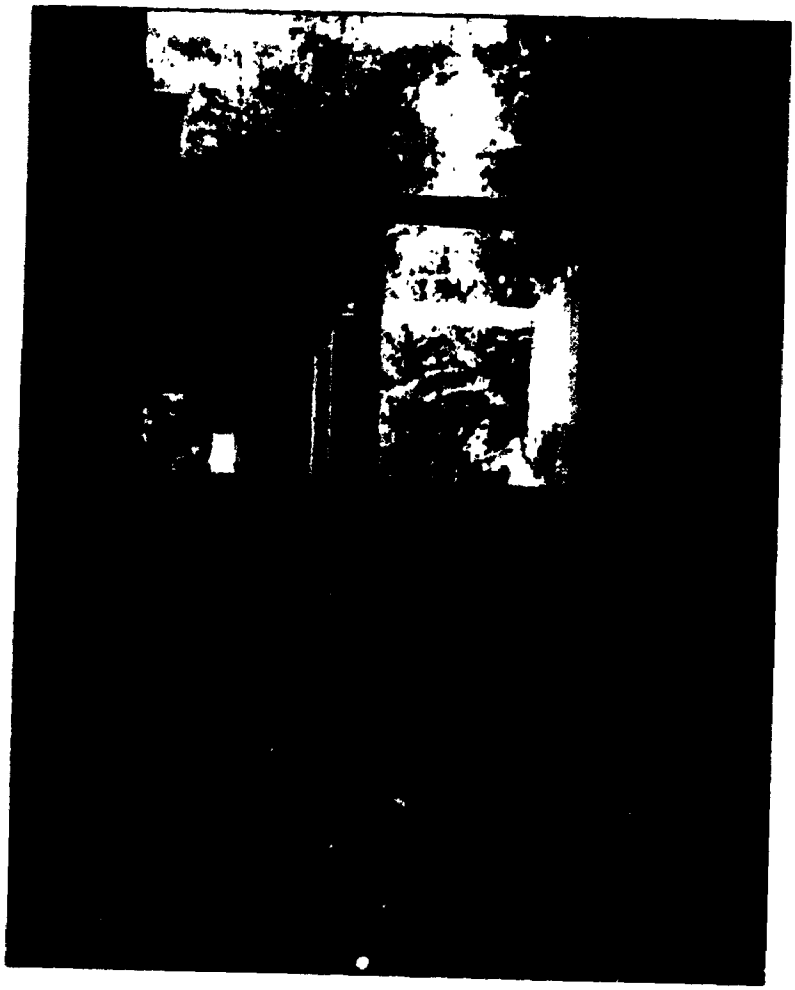


Figure 10-46:

Former garage now transformed into a corner store. Iben Kotiba Street, Damascus. Photo by the author, 1991

Cars are very expensive in Syria, costing up to a half or a third of a two bedroom house. People prefer to park close to their living places. In 1981, Akily, Chairman of the Architectural School in Damascus, advised his students, whose homework was to design a housing project, to design parking spaces close to houses. He said, "Cars are very expensive. If the owner of the car could park his car in his bedroom, he would not hesitate". Using the street for parking, people have no control over this space. Table 10-6 shows that residents of both Attached and Detached areas ranked the importance of parking spaces close to the centre of the list.

In Elevator buildings parking lots are well defined as part of the ground-floor design. Gates secure parked cars. Sometimes, areas beside buildings are allocated to parking. Residents of Elevator buildings indicate higher preference for it than inhabitants in any of the other types of residential areas.

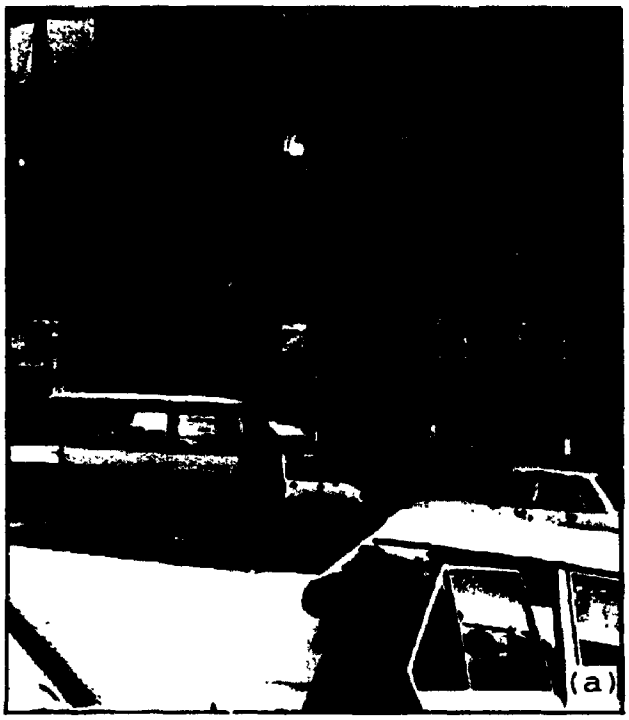
Some people believe that cars and parking lots mean air pollution (H,.,M). However, parking lots carry some interesting significant memories for residents. It is a place that is sometimes Crowded (L,L,L) by adult (M,L,H), youth (.,L,M), or students (.,.,M), who often stand against cars relaxing (M,.,.), gossiping (.,M,L), and smoking (L,L,L). This crowd sometimes is noisy (M,L,L), especially during ceremonial occasions (L,L,M). So past (H,.,L) and childhood (M,.,L) memories can be evoked with the signs of "parking lot".

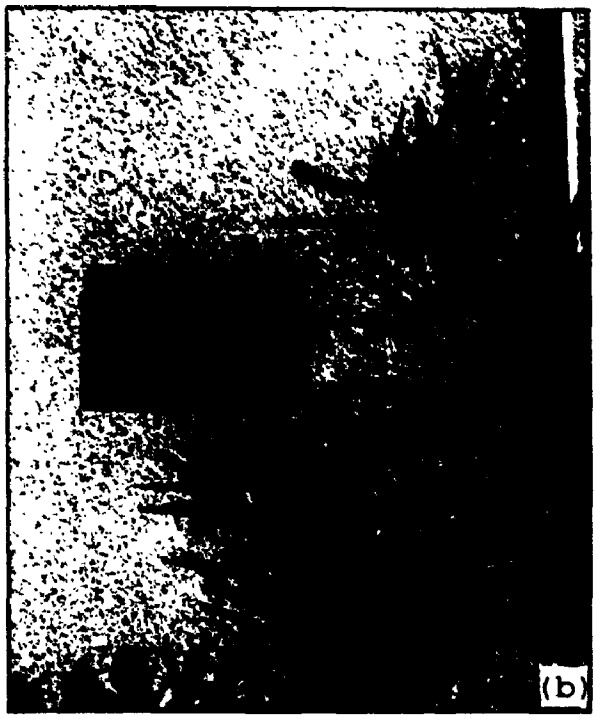
Time (L,M,L) can be read by the level of crowdedness of parked cars that changes during holidays, weekends, mornings, and evenings. For example, an empty parking lot means working hours, (i.e., morning to afternoon). The final meaning of the parking lot is information (.,L,M), gained by talking to others and by noticing familiar cars there; for example, my neighbours are at home, my father is having lunch, and so on.

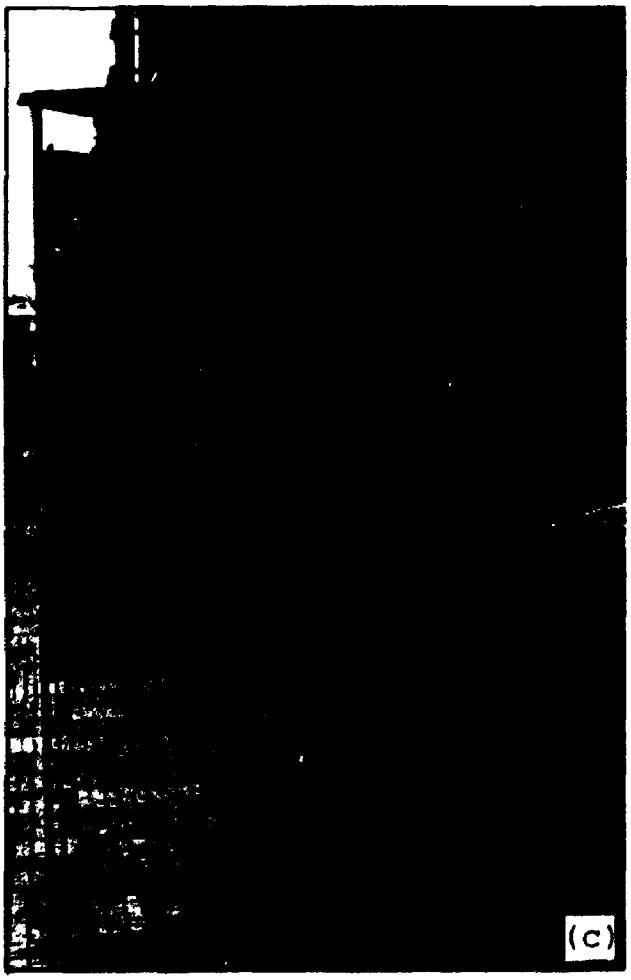
Verbal Sign: ceremony, past, information, God, art, tidy, untidy,

The verbal sign is an added touch t the final product of our nonverbal environment. It provides information (M,M,M,M) for many purposes (see Figure 10-47). First, with paint or neon light, the verbal sign is used to identify places, such as streets, shops, buildings. Also with paint or neon light, verbal signs are used to give directions to areas or certain places. Second, with cultural posters, verbal signs are used to announce cultural activities, such as exhibitions, plays, songs, movies, educational activities, sport matches, funerals, and candidates who are running for parliament or local governmental positions. Third, with plaques hung on public structures, such as mosques, schools, drinking fountains, verbal signs indicate the donor's name and the date of construction. Finally, when someone returns from a pilgrimage, the building is decorated with light bulbs and coloured papers on which different phrases are written, such as "congratulations", "God accepted your pilgrimage", and "there is no God but Allah". This type of temporary decoration is a sign of ceremony (M,L,M,M), and it may remain hung for a month. Used for occasional events and permanent activities, residents of all neighbourhoods strongly associated these meanings to verbal signs, as shown in Figure 10-25-Verbal Sign.

As an important urban element, verbal signs are ranked, as shown in Table 10-6, in the middle range by residents of the four neighbourhood areas. In time, sign material wears out, loses its attractiveness and colour. However, for some people, it becomes an antique and may be considered more attractive. Over use of verbal signs does not help in beautifying the city. Neon signs hung on street light poles distract eyes away from the street panorama. They are untidy (M,M,H,M) and blight the streetscape. On doors of shops in the old city, cultural posters for many different events are glued, one above the







Figures 10-47:

Veral signs. They serve many purposes:

(a) identify shops.
(b) name streets.
(c) announce cultural activities. Damascus, Photos by the author, 1991.

other. Pieces often remain long after their deadlines. These signs tell of the past (M,L,L,M); and time (L,L,L,L). Time of election, funeral or festival. Some signs are skilfully produced, well presented, and even beautiful. Most new signs are bright, colourful, and artistic (.,M,L,L). Neon verbal signs are done to attract the attention of pedestrians to read, especially at night. Residents of Attached and Detached areas described neon signs as tidy (M,M). Finally, residents of Elevator areas regard funeral posters as reminders of death and their duty toward God (M).

(see "Fountain", "Door/Gate", "Bus Stop", "Stairs", and "Elevator", Appendix N)

10-8. SUMMARY

How semantically similar and different are the four types of the residential areas: (Traditional, Attached, Detached, and Elevator neighbourhoods) in regard to the inhabitants? To answer this question, this chapter first looked at the preference of signs chosen by informants. It showed that there are significant differences between the Traditional and the other Modern areas, which showed no significant difference from each other. In another section of this chapter, it is found that Traditional houses have higher frequency values (Max. 9 frequencies) of associated meanings than the other Modern apartment types (Max. 7 frequencies), while Elevator neighbourhoods show lower frequency values (Max. 11 frequencies) of associated meanings than Traditional houses, Attached apartments, and Detached apartments (Max. 14 frequencies).

Meanings associated with signs are affected by their importance to inhabitants, and to frequency of interaction with them. Comparison of highly and moderately associated sign meanings among all neighbourhoods found no significant differences, as the statistical test of Mann-Whitney indicated. It is concluded that as people carry out their daily

activities, they develop certain intersubjective meanings associated with house features/and neighbourhood elements. The general theme identified are: 1) past, such as people, childhood, and time; 2) social activities, such as eating, drinking, studying, gathering, and smoking; 3) religious values, such as prayer, heaven, and God; 4) appearance, such as tidy, dirty, artistic, symbols; and finally 5) feeling, such as security, privacy, responsibility, and possession. Residents respect such associated meanings as part of their future action and interaction with the built environment. Regardless of house design, street layout, and spatial organization of activities, people have a set of meanings associated with their house features and neighbourhood elements.

More specifically, associated meanings with signs may differ from one house design and urban pattern to another. This is because of different possibilities of residents' interaction with signs. For example, Figures 10-15,..,18 showed that in contrast with the three types of Modern apartments, very few Traditional house features are associated with "noise". The relation between house design and street plan can explain this finding. In Traditional houses, the exterior walls are thick (80 to 120 cm), the opening is mainly toward the inner courtyard, and houses are located on the semi-private or semi-public streets. All these features make the Traditional house a quiet place. But how much quieter?

The noise and radio music playing in neighbouring houses are frequently heard through a shared thin wall (Tableh) where two inner courtyards of two neighbouring houses join[5]. Other noises in Traditional houses are cat fights, moving branches of trees, and singing birds. All these four sources of noise are blended to produce a sound of "natural symphony". It is perceived noiseless and liveable.

---

[5] "Tableh" refers to a musical instrument made of a short clay pipe with a piece of leather tied strongly to one of its open ends. Striking the finger tip on this leather piece gives a nice loud sound.

In Modern apartments, openings are toward the outside where noise comes in from pedestrians and vehicles. In chapter 2, plans of Modern neighbourhoods, especially the Elevator neighbourhood, showed the importance of semi-private streets, but a three-dimensional perspective, shows that there is no buffer of street noise except from a few tall trees.

The final section of this chapter discussed many specific house features and neighbourhood elements. From this, it is concluded that interaction with signs has time-spatial dimensions. Signs with high preference and rich in meanings, therefore, are those signs which are always there in time and space. Some house features, and neighbourhood elements are not common features, thus, differences in associated meanings among residents of different neighbourhoods are expected. Such house and neighbourhood signs are: decor, inner window, balcony, garden, inner courtyard, public bath, coffee house, elevator, stairs, library, and covered street.

Urban signs have gone through temporal transformations. Through time, people interact with the signs of their homes and urban settings, such as bedrooms, gust rooms, public streets, and schools. The more people interact with signs, the more meaning they associate with them. Some urban signs, such as semi-public streets, have many meanings with High, Medium, and/or Low degrees of association. Such cases represent the richness of the sign (or varieties of elements that form the sign).

This part of the research looked at the inhabitants' perception-cognition of their houses and neighbourhoods. Though the study is semantic, it helped to identifies the similarities and differences of preference for and associated meanings with urban signs presented in the four residential types of Damascus.

CHAPTER 11. CONCLUSION

People have always sought shelter from harsh weather, and a place where some level of security, and possibly privacy, could be achieved. Across the world, under a variety of environmental circumstances, people attentive to their needs have developed different types of built environments in the context of their evaluations of the natural environment by use of available materials (Oliver 1987, Taylor 1986, Kahn 1973). Places have been carved out of rock (e.g. Cones of Cappadocia, Turkey), rooms dug underneath the earth's surface (e.g. Troglodyte dwellings in northern western China), and mud brick and wood used in ingenious ways to construct shelters and communities (e.g. Middle Eastern traditional cities). Out of family and other group efforts have come local communities and large urban centres. Each culture has distinctive but culturally shared systems of beliefs, attitudes and values, that over time, have formed traditional expressions. These traditions have been expressed through art, architecture, and community designs, social institutions, and conventional behaviours that form spatial patterns.

In cities hundreds of local communities and hundreds of thousands of households, cope with a widening range of built environments. Some neighbourhoods, streets systems, and house designs belong to much earlier eras where relatively undisturbed built forms, spatial arrangements, and lifestyles of occupants still prevail. Other parts of cities represent markedly different designs, spatial patterns, and socio-economic activities whose origins are distinctly foreign and whose features belong to an entirely different urbanscape.

Indigenous and exogenous features of the built environment represent

sets of design elements which together form space to fulfils certain needs pertaining to functional, symbolic, and/or social activities of residents. Design features of domestic facilities differ from non-domestic structures; also, inner parts of neighbourhoods are different from those of the main streets, the coffee house, and the schools. Given the varied environmental settings and activities created, people necessarily seek information about the places they encounter. They are concerned about function, the prevailing social expectations, and possibly symbolic meaning(s). There are usually quite practical reasons for acquiring such information. This information helps individuals to know the particular use and role expectations of that space (Goffman, 1959). The built environment, therefore, is semiotically enhanced by functional, social, and symbolic signs that reflect inhabitants' needs, including self-expression. When such a built environment is achieved, it becomes a form of "togetherness". Individuals acquire a strong sense of attachment to their society. This feeling is promoted when individuals readily acquire and effectively use information from their living space. Relationships between built environment, its component design elements, and people as sources of information are the study of geographical semiotics.

Information is built into the environment, it is a form of communication. Built environments consist of verbal and nonverbal languages that, to understand, must be learned. In other words, there must be common language referents to the information source (sign), as in architectural house design, street system, neighbourhood layout, and behaviour, and the interpreters who decode message(s) that the sign is intended to convey. Without this intersubjectively shared experience, the message is lost, and is ineffective in interactions with others. Whatever, new features (geographical semiotic elements) are added to a place, whether indigenous or exogenous, to be effective and integrated within the culture involves adaptive behaviour of users/occupants. As this happens, there are a communicative effects on others. Ingenious ways are formed,

sooner or later, to fit some new elements into the urban fabric.

This dissertation has examined a range of different built environments (traditional houses and Attached, Detached, and Elevator apartment buildings) in the city of Damascus, where, like so many other cities in the world, long-established and highly-revered traditions have been confronted with demands for change from within society, combined with exogenous changes introduced from the outside. The central concern of the study has been 1) to document differences in four types of these environments consisting of domestic units, streets and neighbourhood layouts, 2) to discuss the related satisfaction/dissatisfaction residents feel with their own domestic environments, and 3) to recognize the communication role designed environments play in informing people about them and 4) to use geographical semiotics to analyze them.

The study applied semiotic theories, as well as architectural and geographical theories to describe, to compare, and to evaluate sampled urban environments. The study examined components of the built environment, both as urbanscape characteristics and as signs and information systems.

11-1. Social Enhancement of House and Neighbourhood Layouts

It is widely believed that the role of architects and urban designers is to create artistic and culturally functional urbanscapes. LeCorbusier defined this role even more specifically by telling his students to be the "organizers of space". It is important for spaces to be usable and fit the requirements of contemporary times. According to this argument form and function are two interrelated parts of the communication process of urban environments. Form and function of urban space are of equal importance. Absence of good form or appropriate cultural usability inhibits effectiveness of urban space and contributes to social stress, dissatisfaction, and deteriorating environments.

(Newman, 1972). Thus, the analyses of examples of four Damascene neighbourhood types considered actual arrangements of outer and inner spaces integrated through networks of routes and cultural meanings. The spatial production of this comes from the application of cultural governing rules and conventions. For outdoor spaces and public buildings (i.e., mosque), there are public, semi-public, and semi-private designation, and for indoor spaces (residence) there are private and semi-private designations. There are also, significant differences in the degree of effective connectivity of spaces between Traditional areas and the other Modern residential areas. These differences are attributed to the differences in relative location and connectivity among spaces. In the case of houses, two principal design features mark these differences:

1) Inner Courtyard vs. Garden:

The location of a green area either in the centre of the house (as the case of inner courtyards in Traditional houses) or in an intermediate place between the house and the street (as in the case of gardens in Modern residential houses). The social logic of inner courtyards means private, while gardens means only semi-private, based on shared use with other residents (as the case of many elevator buildings). When gardens are owned by the first-floor residential units, people, especially women, still have to watch out for pedestrians' intruding eyes.

2) Single Level vs. Multi Level:

The use of multi-level structures in Traditional houses gives the sleeping wing a clear separation from the living and service areas. The sleeping wing has a higher level of privacy and quietness than sleeping wings in single level Modern apartments, where the separation between different parts of the house is enhanced only by partitions and doors. Both (1) and (2) above make the use of other design features, such as inner or outer windows, mashraka (inner balcony) or balcony, and direct or indirect contact with nature.

In the case of neighbourhood, there are also two principal design elements that contribute to differences among Damascene residential areas.

A) Grid-Street System vs. Organic-Street System:

The grid-street system virtually eliminates the semi-private street, as the street network consists only of more or less equivalent streets with regular intersections. The syntactic analyses of Attached and Detached neighbourhoods demonstrated this relationship. Reduction of the rigidity of the grid-street system can be achieved by imposing a break in the thoroughfare in the form of a dead-end street, as found in the Traditional organic-branching-street system. This proposed solution (combination of grid and organic elements) is demonstrated in the Elevator street neighbourhood. Also the straight street creates virtually identical residential blocks, and thus similar social logic among street spaces. It may be easier to follow directions and determine locations within the grid street system, but it lacks intimacy, local control and urban security and privacy. Residents' sense of distinctive street identity may be weakened by overall similarity of street appearances. Strollers perceive the entire straight street at once. No change of the view is expected, except the focus of the viewers change as one gets closer to a different part of the street. In contrast, curved and winding streets are usually full of visual, auditory, olfactory surprises; the street panorama changes as the strollers move along the passageway which reveals and conceals various aspects of urban life.

B) Dead-End Streets vs. Main Streets:

Dead-end streets, as marked by their single exits, provide a safe playground for youngsters, limit intrusion of non-residents, and give the feeling of togetherness and community. These are found mainly in Traditional and Elevator neighbourhoods. Contrastingly, main streets are highly accessible to residents and non-residents, so they are insecure,

low in privacy, noisy, and uncontrolled. They serve as connections in the whole street system. Continuous crowdedness of main public ways, as the case of Traditional streets, can be attributed to concentration of commercial, social, and institutional activities. To reduce such crowdedness, according to planning principles, three solutions can be considered: street enlargement, spreading activities into neighbouring areas, and decentralization of activities. Searching for solutions is beyond the goal of this study; however, crowdedness is a result of either ineffective urban planning and/or high popularity of the area. Movement from public to residential areas should mean a reduction of noise, reduction of encounters with non-residents, and increased local control of space. Street design should shift from semi-public and semi-private, as found in Traditional and Elevator neighbourhoods. Elimination of any of these transitional zones affects social needs for secure and quiet spaces, as Newman (1972) found in his study on American cities.

The function of a space is known by the activities that are carried out in it, such as use of space for shopping, entertainment, residence, education, livelihood, or as in inner spaces for living, sleeping, cooking, or eating. The immediate connection of a space with its neighbouring spaces and its accessability to other spaces in the neighbourhood affects residents' expectations and behaviour (i.e., frequent visits or avoid visits). Thus, decisions on form and function(s) are addressed by architects and urban designers. There are additional matters to be considered: What do people expect from their neighbourhood? How do new urban features affect the function of the space? Does a new addition create a new social logic? Does this new addition make the space function more or less successful? Answers to these questions by architects, developers, and households can contribute to convey the necessary information about place to outsiders as well as insiders.

11-2. Appreciation of Design Features

House and urban designs vary from old to new features, traditional to modern styles, and local to international origins. Preference of one design type or feature over another is not a theoretical matter. Architects, planners, or urban designers can not completely produce what fits their clients just from the drawing board. According to Hiss (1990), a good built environment can be achieved by relying on our built-in ability to experience place directly. That is relying on our sense of place (response, thought, and feeling) seeking personality and replenish the place we love. Awareness, especially simultaneous perception and evaluation of place, is essential to determine its suitability and endurance to particular socio-spatial structure.

Through time, the socio-spatial structure changes, in response to changes in family size and socio-economic status. Some urban elements and house features disappear from sight and mind. For example, the large Damascene traditional house necessary for large, possibly multi-generation families, becomes a burden for the small nuclear family anchored there only for a generation or less than that. This change encourages people to rent their large houses to a number of families who may be careless about maintenance. This contributes to the accelerated deterioration of house and neighbourhood features. When alley doors in Old Damascus were not maintained and were removed, the quality of that environment deteriorated.

Time is not the only factor that contributes to deterioration of environments. In Damascus, Alkanwat buildings in Alzaeria built in 1977 appear as deteriorated as Alamine traditional buildings constructed hundred years ago; and the streetscape of Alsoreia streets in al-Midan is worse than the streetscape of Albadwai, part of Old Damascus. Another factor that accelerates deterioration of properties are inability of inhabitants to maintain their environment. When inhabitants cannot afford to provide regular maintenance, only some people hire others to maintain

elevators, to clean stairs, to care for gardens, and to prevent vandalism.

The importance of practical considerations in evaluating the built environment in relation to its users is evident from the survey done on Damascenes for this research. Even though Damascenes in different residential types similarly expressed satisfaction with their neighbourhood and house designs, on the practical base, all expressed desire to modify their properties. Some people wanted to incorporate modern design features (i.e., modern kitchen, large street, and parks) into their Traditional environments. Others had already changed their original designs; for example, enclosed balcony, redecorated rooms, and/or removed partitions to form larger rooms.

This study also found that in the Traditional area, the semi-private street needs both inhabitants and municipal attention. Improved electrical services, street cleaning, renovation of building facades, removal of non-residential uses, and reinstallation of street gates are needed. The absence of street gates for this zone weakens local identity. The street become another direct link with semi-public streets. Use of street doors makes the alley suitable for children to play outdoors relatively protected. In addition, for security, it buffers noise generated in neighbourhood semi-public and public streets. Damascenes living in Modern residential areas specified mainly cleaning and maintenances needs for their neighbourhoods.

11-3. Meaningful Built Environments

People become familiar with the built environment through interaction with other people and their varied perceptions-cognitions of the built environment. Such experience comes through understanding conventional rules that are developed by one's society to determine when, how, and where one interacts with others. For inhabitants, therefore, the urban semiotic elements in houses, streets, and neighbourhoods are crucial

to conveying what people are attached to their places to relatively be secure in it.

How strongly are associated meanings with the design features? When comparing meanings of signs among the four Damascene residential areas, it is found that the design form has an effect on the strength of meaning associated with its design features. Traditional houses carry higher extreme levels of associated meanings than Modern apartments. Attached, and Detached neighbourhoods have similar frequency, while Elevator neighbourhoods have less levels. This can be attribute to the design effect on observability, as influenced by six factors: 1) intensity, increases likelihood of discerning the sign; 2) landmarks, as signs easy to see and refer to; 3) scale, where signs are big enough to see and not be blocked or dominated by other objects; 4) aesthetics, where signs are distinctive with architectural features or blight; 5) building materials, as distinguishing surfaces by texture, kinds of building materials, colour, and form; and 6) natural elements, as they stand in contrast to the built environment.

Within the professional realm (architects, urban designers, and urban specialist) in Damascus, Traditional and Modern residential areas are considered as totally different types. When someone suggests incorporation of modern designs feature in a residence or a street, objections from others are raised. Such an action is considered offensive against purity and retention of Traditional designs. On the contrary, when someone adopts a traditional feature in a Modern residence, the action is applauded. The author's initial attitude towards the traditional and modern urban and architectural designs was not any different from this professional common view. It could be expected that people would highly prefer traditional design features, especially narrow curved streets and big houses. The result showed the opposite; medium and large streets, and smaller size family units are preferred over their traditional

counterparts. This study has pinpointed several urban environment relationships, that contradict some professional views and support use of geographical semiotics as a viewpoint to increase understanding of the built environment from users' perspectives.

1) Traditional houses are not totally original, many additions have been incorporated such as electricity, running water, bathrooms, separate dining rooms, use of porcelain tiles for kitchen finishing, etc.

2) What is modern is also not totally foreign to traditional style, such as light holes, attachment of buildings, low rise buildings, dead-end streets, pedestrian roads, minarets on street axes, drinking fountains, arches, decoration, curved streets, stony facades, and lattice windows. The three modern residential types (Attached, Detached, and Elevator) incorporate a number of traditional elements in their design form.

3) People's frequent interactions with urban elements are affected by their residential environment. For example, people living in Traditional areas selected the mosque as their first choice to talk about followed by school, while residents living in any of the three Modern residential types selected school over mosque. Such difference is related to effects of the degree of observability of such signs in the different residential settings.

4) People's preference for a residential type shows that the traditional type is understood and preferred mostly by those who live in it and interact with it. For the generation who never experienced such living, they see it just as a respected historical site. This respect weakens when it is compared on a scale of preference for Villa and Detached residential types, which ranked first and second in people's choices respectively.

5. The Elevator street system actually represents a straightened version of Traditional pattern. The street system contains non-curvilinear dead-end streets and pedestrian routes adjacent to main and secondary streets. The social logic of spatially differentiating resident-stranger by the street system in Elevator neighbourhoods has some similarities to the Traditional design which incorporated security, controllability, isolation, and privacy of streets.

Some other designs features also can be looked at as potential elements to incorporate in Traditional houses or to adopt in new designs. Six modern elements can be incorporated in Traditional houses: inner rooms, open plans, decor papers, gates, parks, and parking lots[1]. As many kingdoms, empires, and dynasties left valued signitive evidences of their idealogy in Old Damascus, this generation should not hesitated to do the same, as long as their action respects spatial aspect presented by their ancestors. Three other modern design features (garden, balcony, and plaza) do not seem to fit the traditional design form. Traditional neighbourhoods, in the author's point of view, have better traditional design features to preserve instead. These are: the inner courtyard, *Mashraka* (inner balcony), and strip commercial areas.

There are eighteen traditional design features that can be considered in the future development of Modern neighbourhoods: multi-height ceilings, multi-level apartments, internal stairs, wall closets, arched ceilings, domed ceilings, arched windows, *Ka'a*, *Iwan*, *stone and wood for interior*, *indoor fountain*, curved/windy streets, covered streets,

---

[1] These design features should not be precisely incorporated as they are in Modern designed areas. For example, instead of being the centre of the house, inner room can only be the centre of two or three rooms such as the living room, dining room, and kitchen; or the kitchen, guest room, and *Ka'a*. The use of inner rooms should not reduce the occupants' direct interaction with nature, presented in inner courtyard. To insure direct interaction with nature while using the inner room, a whole glassed wall of the inner room should face the inner courtyard. The relation between the inner room, living rooms, and kitchen can form an open plan, where spaces, usually allocated for corridors and entrance areas, become part of these rooms. The use of street doors (gates), a tradition in old Damascus, has disappeared currently. It is important to consider reinstallation of such design features because of their importance in creating a safe play ground for children, security area for residents, and in increasing the feeling of togetherness. Traditional neighbourhoods lack parks and parking lots. With the increasing demand for parking spaces and green areas, it became important to consider the transformation of some of the highly blighted houses in Old Damascus into parks and parking lots.

stony street, arched street, strip commercial, and museums. Architects and urban designers should develop their own version of these design features to fit contemporary social values and images of spaces[2].

11-4. Limitations of the Study

This study encountered three main shortcomings: 1) a relatively small number of participants in the survey relative to the population of Damascus, 2) an arbitrary selection of participants, and 3) a largely descriptive analyses.[3] The 344 interviewees who participated in the study did provide a workable data base. Despite these problems, this study represents a body of research that contributes to the growing literature on urban and behavioral geography. The contributions can be summarized by four points:

a. Integration of some theories from other disciplines in an urban context, notably architecture and semiotics, provides in a model to reveal geographical semiotics as a communication process.[4]

b. Examination of urban semiotic information among different urbanscapes reveals their differences and similarities.[5]

c. Residents response to and satisfaction/dissatisfaction with their urban environment provides significant information about residential preference.[6]

---

[2] As an example of incorporation of multi-level apartments, an apartment can be linked with an upper one by a private stair case. In this case, two apartments form one house, or a town house within an apartment building. Another solution could be to design living rooms or bedrooms few steps higher than the other part of the apartment. This solution can be systematically applied for all apartments in the building.

[3] Knox (1987, p.368) claims that most of works done on urban semiotics (such as this study) are "highly codified and mechanistic, deliberately and systematically abstracting symbols from their historical and social context".

[4] This study, on one hand, extends architectural understanding into spatial relationships/urban geography where determination of inner and outer space relative locations are basic to form or modify a space network. On the other hand, the study links urban geography with architecture as the space function is confirmed by its architectural characteristics. The overlaps of architecture and urban geography is enhanced through semiotic components (syntactics, semantics, and pragmatics) where space relative locations and the architectural elements form a text that is read and referred to by the users as a result of the combination of indical, symbolic, iconic, and typologic designs to enhance cultural, social, and personal values and needs.

[5] As found in this study, the view of traditional verses modern architecture is not as crucial as it is believed since some similarities between them are detected. Similarities between traditional and modern architecture propose the future possibility of using some modern design features for renovating and restoring traditional residences, and the possibility of applying traditional design features to new residences.

[6] The study used two methods to explore the occupants' subconscious: 1) Indirectly extracting information by an open question regarding changes they have done or wished to have done to their house and neighbourhood features. Their responses indicated the degree of satisfaction with their residences; 2) Addressing a number of meanings to the informants to know their association with the urban design features.

d. Demonstration of that science as a regional application of principles can be linked with humanistic concerns to enhance understandings of the built environment and contribute to improving it.[7]

Geographical semiotic understanding of physical and social integration involves consideration of the environment as a language of communication. Language of communication is any form or manner of verbal and nonverbal expression used by humans to interact with each other and their environment. Language conveys information among its members and even partially to members of different societies. Communication through verbal expression occurs through the use of words, whether talking or writing, while nonverbal expression takes many forms ranging from gestures, body langauge, to dancing, cinema, art and sculpture, architecture, neighbourhood layout, and localized activity. Communication with the built environment is to understand its meanings that, in phenomenalists' point of view, are hidden until we experience the place and interpret its information.

Every built environment has many hidden meanings, some of which are visible as we use it, feel it, and interact with it. Some meanings are intentionally attached to the environment, as we wish, to identify or symbolize some ideals, whether social, religious, political, or otherwise. Interacting with our surroundings and with other fellow human beings generates a whole environment, which changes through time to accommodate additional interests, and better reflect the changing perception of reality. The process that helps to form the whole never stops as long as mobility and dynamics of human beings continues.

---

[7] This study applies urban semiotics theories to evaluate urban and architectural designs. Syntactics, pragmatics, and semantics analyses are important tools in evaluating the existing neighbourhoods, streets, and houses.

APPENDIX A

Pilot study questionnaire. Considering inhabitants appreciation and interpretation of signs, the questionnaire included the following points:

1. the observed signs of houses and neighbourhoods.
2. types of neighbourhood that are preferred most to least.
3. neighbourhood elements or house features that inhabitants like to have in their neighbourhoods and houses.
4. neighbourhood elements or house features that inhabitants like to keep as part of their neighbourhoods and houses.
5. meaning (functional, symbolic, or memory) of each house feature and neighbourhood element that exit in one's domain.
6. the social characteristics:

    a. Socio-economic rating (indirect)
    b. Place of residence (direct question)
    c. Occupation (direct question)
    d. Age (direct question)
    e. Sex (indirect)
    f. Journey to work, shop, or other social activities (direct)
    g. Length of residence (direct)

APPENDIX B

Conduct of 300 interviews.

I hired some people to help me conduct 300 interviews; I divided them into two groups in respect to their working place. I trained them for 10 days:

1. Each worker one answered the questionnaire.
2. each worker interviewed at least three people.
3. An instruction sheet was given to each worker.

What About These Two Groups?

Group One consisted of four people, three men and a woman, working in the City Hall. Their work related to the old city. One of them, who was my relative, was selected as a supervisor. His job was to make appointments with the families regarding the visits, pay the interviewers, and prepare questionnaire forms, pens, and transportation. The following are the work instructions:

1. Interviewers worked four days a week. Tuesday-Wednesday and Saturday-Sunday. Since the group was suggested to have only three people, the supervisor and the woman agreed to work on these four days while one of the two men worked on the first two days, and the other on the other two.

2. They did their interviews either in the morning or in the afternoon (depending on the time agreed upon by the participating families) to prevent consuming the interviewers' entire day.

3. they were expected to meet two families per working day.

4. They tried to interview up to three people in every family, each with different age, sex, and education.

5. Each member of the group interviewed only one person at a time.

Group Two consisted of two supervisors (who were teachers at the Architectural School of Damascus) and six students. Four more students were trained back-up if any of these six students quit. These six students formed two subgroups of three. Since they had term projects and exams, they were left to choose the appropriate time to conduct interviews; however, they were advised to follow the work instructions of Group One.

How to insure the work is done properly?

1. Both groups were organized in a hierarchical order to ensure that everyone was doing their part of the job. I trained a friend to do interviews. He was the head supervisor of two groups: First, every interviewer had his telephone number in case of difficulty. The head supervisor consulted with the supervisors and made arrangements to keep both groups working. He also contacted the supervisor of each group on a weekly basis. Finally, the filled-out survey forms were given to him every two weeks. He paid the supervisors according to the total group hours. I was in contact with this person monthly to know if everything was going OK, and arranged to have the completed interview forms sent to me.

2. The supervisors I selected were three friends and a relative, whom I trust.

3. I paid each interviewer 12 Lira (= 30 cents) per hour. This meant every questionnaire cost a dollar. This rate is equal to, double or triple what is usually is paid for an hour of such work in Damascus.

4. Supervisors received 20 Lira (= 50 cent) because of the responsibility they had.

5. Some friends refused to be paid so I bought them gifts.

6. All extra costs, such as transportation, drinks, or broken appointments, were repaid.

APPENDIX C:

Adult Urban Behaviour Survey

Dear Sir/Madam,

I am a Ph.D. student at the University of Western Ontario, in London, Canada, studying the differences among various residential environments in Damascus, Syria. The residential environments vary from traditional to modern. The aim of this specific survey is to obtain information from you (the resident) about how you picture and remember your neighbourhood and surroundings. In general this research attempts to find out which of the housing types and environmental forms you like or dislike. Participation is voluntary and responses are confidential. You will be an anonymous participator as your name and address are not required.

Your experience is most valuable and your participation in completing this questionnaire is appreciated.

Thank you for your cooperation.

M. Salim Ferwati

Part One

Social Characteristics:

I. Age of interviewee: 18 - 35 ----, 35 - 50 ----, Above 50 ----

II. Sex: male ----, female ----

III. Marital Status:

1. Single ---- 2. Married ----
3. Divorced ---- 4. Widow ----
5. .....

IV. If you have children living with you, please list their ages and sex.

Male _____
Female _____

V. How many people (non family members) live with you currently? Please list their age, sex and relationship to you.

Male _____
Female _____

VI. What is your educational background?

1. no formal schooling ---- 2. elementary school ----
3. secondary school ---- 4. high school ----
5. university ---- 6. college ----

VII. Occupation: _____

VIII. Do you own car, how many? _____
IX. Number of rooms in your house _____
X. Number of rooms your family occupy _____
XI. Ownership: Rend _____ Own _____

XII. Which kinds of houses have you lived in, and what is the time period of your experience?

	years:
1. Traditional house	from .... to ....
2. Attached apartment buildings	from .... to ....
3. Detached apartment buildings	from .... to ....
4. Elevator apartment buildings	from .... to ....
5. Villa	form .... to ....

XIII. What is your relationship with your neighbours? check the appropriate answers

relative ---- friends ----
neighbours ---- foreigners ----

XIV. What frequency do you generally use when visiting these places?

	daily	weekly	monthly	yearly
1. street				
2. coffee house				
3. mosque/church				
4. friends' house				
5. neighbours' house				
6.				

XV. Where do you spend your free time?

1. at home	----
2. in the street	----
3. in the coffee house	----
4. in the mosque/church	----
5. in my neighbours' houses	----
6. in my friends' houses	----
7.	----

XVI. Which mode(s) of transportation do you use for these activities?

	walk	bike	car	taxi	bus
1. shopping					
2. work					
3. school					
4. friends' houses					
5. mosque/church					
6.					

Part Two
Pragmatic Survey:

I. What is your degree of satisfaction with your house? Circle the appropriate number.

very satisfied 1 2 3 4 5 not satisfied

II. What is your degree of satisfaction with your neighbourhood? Circle the appropriate number.

very satisfied 1 2 3 4 5 not satisfied

III. Please rank this list from most to least preferred.

1. Traditional house	1. .....
2. Attached apartment building	2. .....
3. Detached apartment building	3. .....
4. Elevator apartment building	4. .....
5. Villa	5. .....

IV. Have you tried or are you planning to modify some of your house structure to have the traditional or modern impression?

If "Yes" please give some examples of:

1. changes you have made.
2. changes you are planning to make.

V. If you have the authority to modify your neighbourhood, what would you change? Please consider the following points:

1. changes of house exterior characters.
2. changes of street networks.
3. other desired changes.

VI. I will read to you (from two tables) a number of house and neighbourhood elements, one by one. Please, point to those elements that exist in your house and neighbourhood. Answers are recorded on column "A".

Then give your preference to each element (regardless of its existence in your residences). The scale of preference is from one to five.

1 prefer the element very much
2 just prefer it,
3 not decided,
4 do not prefer it,
5 do not preferred it at all.

Answers are recorded on column "B".

Table One
HOUSE FEATURE INVENTORY AND PREFERENCE

	A	B most ----> least 1	2	3	4	5
House Topography:						
open plan (modern)	---	---	---	---	---	---
traditional plan	---	---	---	---	---	---
multi level	---	---	---	---	---	---
one level	---	---	---	---	---	---
Rooms:						
spacious	---	---	---	---	---	---
medium	---	---	---	---	---	---
small	---	---	---	---	---	---
high ceilings	---	---	---	---	---	---
medium hight ceilings	---	---	---	---	---	---
low ceilings	---	---	---	---	---	---
single height	---	---	---	---	---	---
multi height	---	---	---	---	---	---
decorated walls	---	---	---	---	---	---
plain walls	---	---	---	---	---	---
decorated ceilings	---	---	---	---	---	---
plain ceilings	---	---	---	---	---	---
wall closets	---	---	---	---	---	---
no wall closets	---	---	---	---	---	---
arched ceilings	---	---	---	---	---	---
domed ceilings	---	---	---	---	---	---
square room	---	---	---	---	---	---
unsquare room	---	---	---	---	---	---
decor wall paper	---	---	---	---	---	---
.....	---	---	---	---	---	---
Windows:						
inner	---	---	---	---	---	---
outer	---	---	---	---	---	---
with lattice	---	---	---	---	---	---
without lattice	---	---	---	---	---	---
arched	---	---	---	---	---	---
rectangular	---	---	---	---	---	---
big	---	---	---	---	---	---
medium	---	---	---	---	---	---
small	---	---	---	---	---	---
side window	---	---	---	---	---	---
.....	---	---	---	---	---	---
Convenience:						
airy	---					
stale	---					
sunlit	---	---	---	---	---	---
dark	---	---	---	---	--	---
cool in summer	---					
hot in summer	---					
warm in winter	---					
cold in winter	---					
Components:						
entrance	---	---	---	---	---	---
guest room	---	---	---	---	---	---
corridor	---	---	---	---	---	---
inner room	---	---	---	---	---	---
kitchen	---	---	---	---	---	---
dining room	---	---	---	---	---	---
bedroom	---	---	---	---	---	---
living room	---	---	---	---	---	---
main room (ka'a)	---	---	---	---	---	---
bathroom	---	---	---	---	---	---
inner courtyard	---	---	---	---	---	---
fountain	---	---	---	---	---	---
trees and plant	---	---	---	---	---	---
garden	---	---	---	---	---	---
Iwan	---	---	---	---	---	---
Mshraka	---	---	---	---	---	---
open balcony	---	---	---	---	---	---
semi-glazed balcony	---	---	---	---	---	---
glazed balcony	---	---	---	---	---	---
used roof	---	---	---	---	---	---
pitched roof	---	---	---	---	---	---
inner stairs	---	---	---	---	---	---
storage	---	---	---	---	---	---
garage, car port	---					
doors between rooms	---	---	---	---	---	---
joint flat roof	---	---	---	---	---	---
.....	---	---	---	---	---	---
Construction Material:						
wood	---	---	---	---	---	---
stone / marble	---	---	---	---	---	---
adobe	---	---	---	---	---	---
concrete	---	---	---	---	---	---
metal	---	---	---	---	---	---
tile	---	---	---	---	---	---

Table 2
NEIGHBOURHOOD FEATURE INVENTORY AND PREFERENCE

	A	B most 1	2	3	4	----> least 5
Commercial:						
strip	---	---	---	---	---	---
plaza	---	---	---	---	---	---
corner store	---	---	---	---	---	---
grocery store	---	---	---	---	---	---
butcher shop	---	---	---	---	---	---
bakery	---	---	---	---	---	---
fast food rest.	---	---	---	---	---	---
coffee house	---	---	---	---	---	---
pharmacy	---	---	---	---	---	---
barber shop	---	---	---	---	---	---
clinic	---	---	---	---	---	---
public bath	---	---	---	---	---	---
.....	---	---	---	---	---	---
Public Buildings:						
kindergarten	---	---	---	---	---	---
elementary school	---	---	---	---	---	---
secondary school	---	---	---	---	---	---
high school	---	---	---	---	---	---
library	---	---	---	---	---	---
museum	---	---	---	---	---	---
mosque/church	---	---	---	---	---	---
.....	---	---	---	---	---	---
Street:						
straight	---	---	---	---	---	---
windy	---	---	---	---	---	---
narrow	---	---	---	---	---	---
medium width	---	---	---	---	---	---
large	---	---	---	---	---	---
dead-end	---	---	---	---	---	---
covered	---	---	---	---	---	---
not covered	---	---	---	---	---	---
tree/plant	---	---	---	---	---	---
sidewalk	---	---	---	---	---	---
pedestrian road	---	---	---	---	---	---
stony	---	---	---	---	---	---
asphalt	---	---	---	---	---	---
.....	---	---	---	---	---	---
Other Characteristics:						
drinkg fountain	---	---	---	---	---	---
fountain	---	---	---	---	---	---
door for alleys	---	---	---	---	---	---
dome	---	---	---	---	---	---
minaret	---	---	---	---	---	---
tower	---	---	---	---	---	---
arch	---	---	---	---	---	---
cultural poster	---	---	---	---	---	---
neon signs	---	---	---	---	---	---
painted sign	---	---	---	---	---	---
fence	---	---	---	---	---	---
parking lot	---					
bus stop	---					
park	---					
elevator	---					
stairs	---					
inside fence	---					
.....	---					
Mosque/Church:						
old style	---	---	---	---	---	---
new style	---	---	---	---	---	---
close by	---	---	---	---	---	---
far away	---	---	---	---	---	---
inner courtyard	---	---	---	---	---	---
garden	---	---	---	---	---	---
.....	---	---	---	---	---	---
Building Material:						
wood	---	---	---	---	---	---
stone / marble	---	---	---	---	---	---
adobe	---	---	---	---	---	---
concrete	---	---	---	---	---	---
metal	---	---	---	---	---	---
.....	---	---	---	---	---	---

Part Three
Semantic Survey:

I. From a set of cards that represents your house features, please select at least five of the most important or meaningful to you. Write the number of each card below according to the order of their selection:

A. .....
B. .....
C. .....
D. .....
E. .....
.. ..

II. What kinds of activities do you associate with these five house features?

Concerning one of these five house features at a time, I am going to read on you some phrases. If the meaning of each sentence I read related to the house feature then say "Yes" otherwise "No". Please have a look at each selected house feature before discussing it.

Notice: I will fill the following blank space according to the oral answer of the interviewee.

A	B	C	D	E	
___	___	___	___	___	feeling of privacy
___	___	___	___	___	for family gathering
___	___	___	___	___	study
___	___	___	___	___	hunger
___	___	___	___	___	ceremonies (wedding)
___	___	___	___	___	a sacred place (heaven)
___	___	___	___	___	childhood memory
___	___	___	___	___	some past activities
___	___	___	___	___	some people
___	___	___	___	___	religious principles
___	___	___	___	___	has social value
___	___	___	___	___	feeling of control
___	___	___	___	___	feeling of possession
___	___	___	___	___	feeling of security
___	___	___	___	___	feeling of responsibility
___	___	___	___	___	noise of neighbours
___	___	___	___	___	.....
___	___	___	___	___	.....

III. From a set of cards I have of your neighbourhood, please select at least five photos that are meaningful to you. Write the number of each card below according to the order of their selection:

A. .....
B. .....
C. .....
D. .....
E. .....
.. ..

IV. What kinds of activities do you associate with these five urban elements? (Follow the previous steps in question II)

A	B	C	D	E	
___	___	___	___	___	stimulate me to drink
___	___	___	___	___	school children
___	___	___	___	___	stimulate me to eat (hunger)
___	___	___	___	___	a ceremonial place (wedding)
___	___	___	___	___	a sacred place (heaven)
___	___	___	___	___	childhood memory
___	___	___	___	___	some past activities
___	___	___	___	___	the time of the day
___	___	___	___	___	God
___	___	___	___	___	religious obligation
___	___	___	___	___	a place to relax
___	___	___	___	___	a place to obtain information
___	___	___	___	___	a place for gossip
___	___	___	___	___	a place to gain knowledge
___	___	___	___	___	impaired breathing (cigarette)
___	___	___	___	___	polluted place
___	___	___	___	___	crowded place
___	___	___	___	___	noisy place
___	___	___	___	___	place to meet people for joy
___	___	___	___	___	place symbolize the tradition
___	___	___	___	___	landmark
___	___	___	___	___	a place for bad people
___	___	___	___	___	a place for the youth
___	___	___	___	___	a place for adult
___	___	___	___	___	a place for wasting money
___	___	___	___	___	is a piece of art
___	___	___	___	___	tidy and clean
___	___	___	___	___	dirty place
___	___	___	___	___	call of solicitors
___	___	___	___	___	.....

APPENDIX D

Social circumstances of inhabitants of four neighbourhoods.

Table D-1: Duration 86 participants in the survey of each residential type experienced any of the Traditional, Attached, Detached, Elevator and Villa neighbourhoods. Values represent the number of participants.

Durations (years)	Traditional	Attached	Detached	Elevator	Villa	Traditional	Attached	Detached	Elevator	Villa
	Traditional					Attached				
2 - 5	3	7	3	0	0	3	7	1	0	2
6 - 10	2	3	0	0	0	5	3	5	0	0
11 - 20	19	2	3	0	1	3	23	4	0	4
21 - up	62	0	0	0	0	9	53	4	0	3
Total	86	12	6	0	1	2'	86	14	0	9
	Detached					Elevator				
3 - 5	6	10	13	3	0	1	4	1	19	4
6 - 10	11	7	2	4	3	11	5	5	19	1
11 - 20	14	6	43	0	0	15	19	16	46	0
21 - up	10	4	28	0	1	7	3	7	2	0
Total	41	27	86	7	4	34	31	29	86	5

Table D-2: Relationship of 86 participants in the survey of each neighbourhood type with their neighbours. Values in percentages of participants.

Neighbourhood Type	Relatives	Friends	Neighbours	Strangers
Traditional House	71	81	88	58
Attached Apartment	38	73	95	66
Detached Apartment	51	80	95	92
Elevator Apartment	43	84	92	77

Table D-3: Places where 86 participants in the survey like to spend their free times. Values in percentages of participants.

Neighbourhood Type	At home	Street	Coffee house	Mosque	with Neighbours	with Colleagues	with Friends
Traditional House	88	14	12	34	70	28	35
Attached Apartment	83	16	8	33	67	50	58
Detached Apartment	78	29	10	7	84	38	63
Elevator Apartment	81	23	10	18	77	34	67

Table D-4: Percentages of frequent visits of participants in the survey to various places, by all neighbourhoods.

Frequent	coffee house	mosque	neighbours	colleagues	friends	coffee house	mosque	neighbours	colleagues	friends
	Traditional					Attached				
Day	2	8	14	5	3	2	7	20	2	0
Week	6	25	30	3	10	6	20	30	17	21
Month	5	5	26	17	13	1	8	23	24	20
Year	0	10	7	5	9	5	9	6	3	20
Total	13	48	77	30	36	14	44	79	48	60
	Detached					Elevator				
Day	0	6	14	6	6	0	1	9	1	9
Week	3	34	33	6	23	2	29	33	12	26
Month	7	6	24	26	23	1	7	31	21	22
Year	3	16	12	5	13	8	13	8	2	10
Total	14	62	83	42	65	12	50	81	36	67

Table D-5: Percentages of participants in the survey use different transportation modes to reach various places, by all neighbourhoods.

Transport Mode	Places					Percent
	shopping	Work	School	visit Friends	Mosques	
	Traditional					
walk	75	47	68	55	98	68
bike	7	12	0	4	0	5
car	3	12	0	11	0	6
taxi	9	7	0	19	0	10
bus	6	23	32	12	2	11
	Attached					
walk	59	30	38	43	78	49
bike	0	2	3	3	2	2
car	11	21	16	14	9	14
taxi	17	8	8	15	7	12
bus	13	39	35	24	4	23
	Detached					
walk	4	28	33	50	86	48
bike	4	4	0	0	0	2
car	20	21	18	19	9	18
taxi	13	11	25	17	5	15
bus	17	36	23	15	0	17
	Elevator					
walk	36	17	34	38	80	39
bike	2	4	2	1	0	2
car	20	26	20	24	16	22
taxi	23	23	18	15	2	17
bus	19	30	26	21	2	20

Table D-6: Socio-Characteristics of the four types of residential areas, T, A, D, and E. Values in percentages of participants.

Social Indication	Traditional	Attached	Detached	Elevator
Age				
18 to 35	45	58	62	66
36 to 50	22	11	13	13
51 and older	18	17	10	6
Sex				
male	36	31	36	37
female	49	55	49	48
Status				
single	28	48	54	56
married	52	31	23	27
divorce	1 *	0 *	3 *	0
widow	4 *	5 *	5 *	1
Family Size				
1 to 5	22	34	22	15
6 to 9	29	39	44	50
10 and up	33	13	19	19
Education				
illiterate	11 **	3 *	2 *	2
elementary	20	7	14	7
high	27	22	16	22
college	8	7	7	11
university	18	46	46	40
Occupation				
gvt official	22	25	17	23
students	9	27	31	31
workers	14	9	10	10
house keeper	32	15	20	14
retired	3 *	5 *	3 *	1
trader/doctor	4 *	5 *	4 *	5
Room All				
1 to 3	7	26	8	6
4 to 5	24	45	54	62
6 to 7	19	13	18	17
8 and up	34 **	2 *	5 *	0
Asset				
owned	67	65	72	79
rented	18	21	13	3
Cars				
none	61	61	51	41
1 or more	24	25	34	44

* small size of participants (5 or less), data not used
** applied data but incomparable with "**" data

APPENDIX E

Procedures for weighting and summing frequencies obtained from a five-point scale questionnaire.

In this research, these frequencies are spread out on five points (1 to 5) in three types of questions: 1) participants select one option of five-point scale to express their preference for each house feature and neighbourhood element; 2) participants rank five residential types from the most to the least preferred; and 3) participants rank five-preferred cards (from most to least) out of 21-house features and 33-neighbourhood elements.

To calculate the sum of weighted frequency values, first, calculate the weighted frequency value for each point of the scale (1, 2, 3, 4, 5), presented in each house feature or neighbourhood element according to formula (1):

$$(1) \quad Wi = X * i$$

$$(2) \quad SW = W1 + W2 + W3 + W4 + W5$$

where as:

Wi	weighted value for selection order i
i	order of selection (5.., or 1)
X	value for selection order i
SW	sum of weighted values

"i" is equal to 5, 4, 3, 2, or 1 for the selection order 1st, 2nd, 3rd, 4th, and 5th. The value for selection of X is equal to the number of participants who selected a certain order of the scale. Second, sum the five weighted frequencies for all five choices of the scale, formula (2). The results represent the degree of preference for each house feature/neighbourhood element by all participants. For example, in Appendix F, plaza has the frequencies of 1, 1, 14, 27, and 43. The respective weighted values (Wi) for these figures are 1, 2, 42, 108, and 215; and the sum of weighted values (SW) is 368.

The resultant summation (i.e., sum of weighted values' columns in Appendix F) can be sorted for each house and neighbourhood type (T, A, D, and E). The higher the sum of weighted values, the more preferred it is.

APPENDIX F

Frequency values and the sums of weighted values of people's preference for neighbourhood element. Traditional (T) and Attached (A) neighbourhoods.

	Traditional						Attached					
Ngbd Elements	least 1	2	3	4	most 5	sum of weight values	least 1	2	3	4	most 5	sum of weight values
Commercial:												
strip	0	1	16	33	35	361	2	2	27	35	20	326
plaza	1	1	14	27	43	368	4	1	10	29	41	360
corner store	1	0	8	26	51	383	[illegible]	2	17	32	34	354
keddary	1	0	6	26	53	387	3	1	19	31	32	346
butcher shop	1	1	6	26	52	384	3	6	16	31	30	336
bakery	1	0	5	27	53	388	4	1	12	35	33	350
fastfood rest.	2	1	8	28	47	374	4	4	13	30	34	344
coffee house	17	18	14	10	28	270	20	23	23	9	11	227
pharmacy	0	0	2	28	56	397	3	3	7	31	41	362
barber shop	2	2	8	26	48	373	4	3	15	29	35	346
clinic	0	0	2	21	63	404	3	4	7	30	41	360
public baths	18	7	12	13	35	296	27	17	18	11	13	225
Public Buildings:												
kindergarten	0	1	3	21	61	399	5	3	8	27	42	356
elementary school	0	0	3	23	60	400	6	6	13	25	37	344
secondary school	0	1	7	21	57	391	7	6	11	25	38	344
high school	0	2	7	18	59	391	7	8	15	23	33	324
library	0	2	11	22	51	379	1	2	11	30	41	366
museum	1	6	14	19	45	359	4	15	24	20	24	302
mosques/church	0	1	2	16	67	406	3	4	5	22	52	373
Streets:												
straight	0	2	9	32	43	373	0	1	16	32	37	363
windy	11	17	24	19	14	266	17	20	29	12	8	234
narrow	24	25	1[illegible]	13	10	218	31	30	12	6	6	184
medium	1	6	37	23	19	311	3	7	36	29	10	294
large	4	4	8	20	50	364	1	2	10	30	42	368
dead-end	24	23	16	13	9	218	37	21	17	8	3	177
covered	1	12	19	30	24	320	20	11	23	23	11	258
not covered	2	4	25	31	25	329	1	2	24	36	23	335
tree/plant	0	0	3	18	65	406	0	2	5	16	63	397
sidewalk	0	1	3	29	53	391	0	2	5	27	52	386
pedestrian road	0	0	4	32	50	389	1	4	11	22	48	368
stony	0	4	12	30	40	363	2	6	33	21	24	316
asphalt	3	1	19	41	22	334	1	2	38	31	13	311
Other Characteristics:												
drinkg fountain	3	0	3	15	65	397	2	3	8	25	48	370
fountain	1	12	6	17	50	361	0	5	9	25	47	370
gate	6	21	20	12	27	291	11	20	22	17	17	265
dome	2	8	22	20	33	332	7	9	22	26	22	303
minaret	2	0	1	18	65	401	5	4	7	25	45	357
tower	5	18	15	19	29	305	22	10	16	13	25	267
arch	0	5	15	24	41	359	3	9	27	24	23	311
cultural poster	30	15	18	10	13	218	38	13	13	15	6	195
neon sign	7	9	28	25	17	292	10	5	26	33	11	288
painted sign	4	8	27	25	23	311	16	11	33	19	7	249
fence	4	4	29	22	29	326	0	3	10	27	46	373
Musque/Church:												
old style	0	4	7	13	62	390	4	3	13	20	46	357
new style	3	4	22	34	23	327	6	1	20	27	34	344
close	0	1	8	16	61	394	3	5	10	22	46	359
far	15	16	36	12	6	235	17	13	25	11	19	257
Bldg Material:												
wood	2	6	18	18	42	349	6	7	17	31	25	319
stone/marble	1	4	9	23	48	371	3	4	11	29	38	353
adobe	10	12	22	17	25	295	19	24	26	7	10	224
concrete	11	5	24	20	25	302	5	7	32	23	19	300
metal	19	12	31	23	0	231	10	15	28	17	17	272
Mean	4	6	13	22	40	346	8	7	17	24	30	319
Median	1	4	12	22	44	363	4	4	16	25	33	336

APPENDIX G

Frequency tables of participants' satisfaction with their houses and neighbourhoods. The sums of the weighted values for each residential type, T,A,D, and E, are shown.

	House: least 1	2	3	4	most 5	sum of weight values	Neighbourhood: least 1	2	3	4	most 5	sum of weight values
Tradition	4	5	22	20	33	325	4	12	16	17	34	323
Attached	2	7	31	24	22	318	6	6	34	18	22	302
Detached	1	4	22	39	20	331	0	5	16	33	32	350
Elevator	0	1	28	35	22	336	1	8	22	38	17	320

APPENDIX H

Frequency table and percentages of participants' preference for the five neighbourhood types, T,A,D,E, and V from the most to the least. The middle column shows the sums of weighted values.

	Frequency least 1	2	3	4	most 5	sum of weight values	Percentage least 1	2	3	4	most 5
	TRADITIONAL										
Traditional	10	3	5	14	53	347	12	4	6	17	62
Attached	32	23	22	6	4	182	37	26	25	7	5
Detached	7	17	37	19	5	250	8	20	43	23	6
Elevator	33	26	14	12	1	177	38	30	17	14	1
Villa	3	17	8	34	24	308	4	20	10	39	27
	ATTACHED										
Traditional	28	12	12	15	19	243	33	14	14	17	22
Attached	12	26	30	10	8	234	14	30	35	12	9
Detached	4	11	33	29	9	286	5	13	38	34	10
Elevator	37	24	6	14	5	184	43	28	7	16	6
Villa	5	13	6	17	45	342	6	15	7	20	52
	DETACHED										
Traditional	14	12	29	11	20	269	16	14	34	13	23
Attached	18	32	25	4	7	208	21	37	29	5	8
Detached	11	2	17	40	16	306	13	2	20	47	19
Elevator	41	26	8	6	5	166	48	30	9	7	6
Villa	1	14	6	26	39	346	1	16	7	30	45
	ELEVATOR										
Traditional	36	18	9	6	17	208	42	21	10	7	20
Attached	22	23	27	10	4	209	26	27	31	12	5
Detached	4	9	32	32	9	291	5	10	37	37	10
Elevator	18	33	16	14	5	213	21	38	19	16	6
Villa	6	3	2	24	51	369	7	3	2	28	59

APPENDIX I

Sample of socio-demographic attributes related to residential preference.

The following example is provided from collected data that dealt with the opening question of what people have modified, are planning or wishing to modify in their houses and neighbourhoods. It is hypothesized that willingness of inhabitants to modify their living space is affected by their socio-demographic attributes. To test this hypothesis, Tables I-1 and I-2 are constructed. Interviewees from each type of the four residential areas (T, A, D, and E) have different socio-demographic attributes. These are defined by: age, sex, marriage status, family size, education, occupation, size of residences, property possession, and car ownership.

These tables show that people's actions or intentions to maintain traditional (T) and or modern (M) features in their domains is related to the basic design features of their residences, regardless of their socio-demographic attributes. For example, residents of the Traditional area have changed, are willing, or wish to change their property and neighbourhoods to have more traditional design features. Also in modern areas, residents primarily expressed their needs for renovation and modern design features in their households and neighbourhoods. So, the proposed hypothesis is rejected. However there are some exceptions. In Table I-1, 61 percent of college educated residents expressed preference for modern elements, and only 37 percent highly regarded traditional design features. University-educated residents have similar appreciation for traditional and modern features. In the Attached area, large families (10 or more members) and college-educated residents show similar preferences for both traditional and modern design features. In the Detached area, an equal percentage of middle-aged, married, middle-sized families, college and university-educated, and government service residents used or desired to apply traditional and modern design features. A slightly higher percentage of people living in large houses expressed their preferences for traditional design features (44 %) over modern (33 %). In the Elevator area, only one group, 48 percent living in small house (1-to-3 rooms), preferred traditional design features to modern.

In Tables I-2, Traditional area, there are 80 percent illiterate and 68 percent elementary-educated residents who preferred to apply modern elements; and only 62 percent of the former and 49 percent of the latter preferred to apply traditional elements. But, 81 percent of the university-educated residents preferred to use traditional elements and only 42 percent of them preferred to use modern elements. In Attached neighbourhood, 62 percent of large family (10 and up members) residents expressed their preference for applying traditional and modern elements; similarly percentage of high school educated residents preferred to apply for traditional (73) and modern (68) elements. In Detached area, middle age, elementary- and college-educated residents, and moderate large houses residents preferred the used of traditional and modern features in an equal percentage. In the Elevator area, all residents with different socio-demographic attributes preferred the use of modern elements to the traditional.

Table I-1: Percentage of residents in each residential area who had changed or planned to change some of their house features to Traditional (T) or Modern (M). (*) Cases too few (5 or less) to be included.

Demographic and Social Attributes	Percent of Residents Changing Residential features							
	Tradition		Attached		Detached		Elevator	
	T	M	T	M	T	M	T	M
Age								
18 to 35	51	36	26	50	27	52	12	50
36 to 50	62	36	9	45	46	46	7	59
51 and older	60	43	35	59	20	50	0	32
Sex								
male	62	38	23	48	36	56	11	38
female	51	37	27	53	24	47	10	60
Status								
single	49	49	27	50	24	48	9	51
married	61	29	23	55	52	57	14	46
divorce	*		*		*		*	
widow	*		*		*		*	
Family Size								
1 to 5	58	49	24	59	23	64	6	32
6 to 9	61	37	23	49	34	34	10	51
10 and up	50	30	38	38	26	74	15	61
Education								
illiterate	71	27	*		*		*	
elementary	44	29	43	57	14	36	0	55
high	58	25	14	68	19	88	9	61
college	37	61	43	43	47	43	9	44
university	65	60	26	46	35	43	15	45
Occupation								
gvt official	53	44	24	52	53	47	17	34
students	65	54	30	48	16	52	13	58
workers	63	21	22	56	20	60	0	68
house keeper	55	34	27	47	20	55	7	69
retired	*		*		*		*	
trader/doctor	*		*		*		*	
Room All								
1 to 3	70	14	15	54	13	75	48	32
4 to 5	57	28	31	49	28	52	6	58
6 to 7	51	41	31	46	44	33	11	28
8 and up	55	46	*		*		*	
Asset								
owned	53	43	31	43	32	53	10	50
rented	65	16	10	76	15	38	*	
Cars								
none	54	31	25	48	25	51	15	64
1 or more	61	53	28	60	35	50	11	57
Total	56	37	26	51	29	51	10	50

Table I-2: Percentage of residents in each residential area who had changed or planned to change some of their neighbourhood elements to Traditional (T) or Modern (M). (*) Cases too few (5 or less) to be included.

Demographic and Social Attributes	Percent of Residents Changing Residential features							
	Tradition		Attached		Detached		Elevator	
	T	M	T	M	T	M	T	M
Age								
18 to 35	69	64	52	79	40	74	32	63
36 to 50	62	71	45	82	62	62	22	82
51 and older	71	60	47	76	40	50	0	97
Sex								
male	71	57	45	77	44	78	24	78
female	65	71	53	80	43	63	31	62
Status								
single	70	63	50	79	43	72	32	70
married	69	63	48	81	52	70	21	64
divorce	*		*		*		*	
widow	*		*		*		*	
Family Size								
1 to 5	58	62	44	82	32	68	26	58
6 to 9	77	64	51	82	48	66	28	67
10 and up	65	68	62	62	47	79	30	81
Education								
illiterate	62	80	*		*		*	
elementary	49	68	57	71	57	64	41	83
high	76	72	73	68	50	81	31	57
college	61	61	29	90	57	43	35	70
university	81	43	43	85	37	72	25	79
Occupation								
gvt official	75	58	40	88	41	76	25	67
students	76	76	56	70	29	65	29	74
workers	63	63	56	89	70	80	48	97
house keeper	58	73	53	73	40	65	28	62
retired	*		*		*		*	
trader/doctor	*		*		*		*	
Room All								
1 to 3	70	56	42	81	38	75	32	64
4 to 5	57	65	56	80	39	74	31	68
6 to 7	67	77	54	77	50	56	17	74
8 and up	75	60	*		*		*	
Asset								
owned	64	62	57	75	43	71	30	68
rented	81	76	29	90	46	62	*	
Cars								
none	68	67	46	79	41	73	44	79
1 or more	65	61	60	80	47	65	24	86
Total	67	65	50	79	44	69	28	69

APPENDIX J

Two samples of frequency values and the sum of weighted values of people's preference for each house design feature. Traditional House and Attached Apartments

		Traditional Houses						Attached Apartments					
ID	House Feature	1	2	3	4	5	sum of weighted values	1	2	3	4	5	sum of weighted values
1	decor	8	5	2	6	2	80	3	1	1	2	1	27
2	wall closet	4	3	0	5	4	46	1	2	3	1	1	25
3	inner window	4	2	4	2	4	48	0	0	1	0	0	3
4	outer window	4	5	4	1	3	57	7	6	3	5	6	84
5	lattice	2	0	2	1	0	18	1	0	2	1	1	14
6	entrance	4	1	2	2	1	35	6	2	2	2	2	50
7	guest rm	2	6	1	3	1	44	5	3	10	7	7	88
8	corridor	0	0	0	1	1	3	1	2	2	2	2	25
9	inner rm	0	0	0	0	0	0	2	3	1	6	5	42
10	kitchen	5	6	15	6	6	112	8	9	9	10	9	132
11	dining rm	0	2	2	1	0	16	1	3	3	3	2	34
12	bed rm	10	6	7	6	6	113	11	6	11	11	6	140
13	living rm	6	11	5	8	8	113	10	15	7	8	9	156
14	main rm, ka'a	3	6	7	4	5	73	1	2	1	2	1	21
15	bath rm	5	3	4	4	4	61	4	3	4	6	5	61
16	fountain	3	4	5	3	2	54	2	0	1	2	1	18
17	trees	8	8	2	10	9	107	9	10	8	6	13	134
18	gden/ctyrd	10	9	13	9	9	152	5	8	0	4	1	66
19	iwan	2	3	2	4	6	42	0	0	0	0	0	0
20	mshka/blcny	4	3	2	2	5	47	6	9	13	6	6	123
21	used roof	2	3	7	8	9	68	1	2	4	2	8	37

APPENDIX K

Traditional house example, percentages of frequently selected meanings for each house feature. Notice, if only one person decides to talk about the meanings of a sign, the percentage is equal to 100. Such a result is highly biased. To ease this problem, a condition is added during the calculation of the percentages. If the number of people is 1,2, or 3, then the frequency will be divided by 4. The number 4 is the number of the categories of different levels of associated meanings for a sign, as shown in Appendix 10-3. Finally, all 100 percents are reduced to 99, as an indication of the existence of some subjectivity in such data. The last column of each table indicates the number of participants who cited each sign.

Traditional House

	privacy	gathering	study	hunger	ceremony	heaven	childhood	past	people	religion	social values	control	possession	security	responsibility	noise	people
house	92	70	25	36	52	40	9	36	30	61	61	67	58	96	96	9	57
decor	26	13	13	0	13	52	26	26	13	81	13	7	25	19	19	13	22
wall closet	50	0	62	37	0	12	75	62	25	37	37	0	37	37	12	12	16
inner window	37	75	62	12	37	37	75	50	50	25	50	0	12	50	12	12	16
outer window	35	0	35	0	35	23	70	23	35	0	23	11	23	11	0	58	17
lattice window	80	0	0	0	0	0	40	40	40	0	0	0	0	80	0	0	5
entrance	60	40	40	20	20	0	40	20	20	0	20	60	40	20	0	0	10
guest rm	30	0	46	0	76	0	30	61	76	15	76	46	30	15	46	0	13
corridor	25	0	0	0	0	0	25	0	0	0	0	50	25	25	0	0	2
inner rm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
kitchen	63	36	21	97	31	5	15	21	47	26	21	31	31	26	78	5	38
dinning rm	0	99	40	40	0	0	0	0	0	0	0	0	0	0	40	0	5
bed rm	94	17	71	22	11	45	34	6	68	51	22	34	80	94	34	5	35
living rm	52	78	78	26	31	21	36	31	78	63	47	21	15	47	36	5	38
main rm, Ka'a	32	64	16	8	32	8	16	16	64	24	32	32	24	24	16	0	25
bath rm	90	40	45	10	50	60	60	30	50	30	30	40	40	70	20	10	20
fountain	23	47	11	11	23	76	47	47	35	47	23	0	11	11	0	0	17
trees and plants	32	37	59	32	32	86	48	54	59	37	16	3	48	48	43	0	37
garden/ctyrd	48	80	80	24	80	90	76	60	72	44	80	8	32	36	28	24	50
iwan	11	76	64	0	64	11	35	23	70	23	23	11	23	23	0	23	17
mshka/blcny	50	75	75	37	0	25	75	12	37	0	50	25	0	12	0	25	16
flat roof	27	55	75	20	48	34	79	41	34	27	13	20	13	20	6	48	29

APPENDIX L

Common value (median value) and four levels of associated meanings with each house type and neighbourhood area.

Houses:

Type	Common Value	(100-common V)/3	Level of Association
Tradition	25	25	"." = 0 to 24 "L" = 25 to 49 "M" = 50 to 74 "H" = 75 to 100
Attached	24	25	"." = 0 to 24 "L" = 25 to 49 "M" = 50 to 74 "H" = 75 to 100
Detached	15	28	"." = 0 to 14 "L" = 15 to 42 "M" = 43 to 70 "H" = 71 to 100
Elevator	13	29	"." = 0 to 12 "L" = 13 to 41 "M" = 42 to 70 "H" = 71 to 100

Neighbourhoods:

Type	Common V	(100-common V)/3	Level of Association
Tradition	12	29	"." = 0 to 11 "L" = 12 to 40 "M" = 41 to 70 "H" = 71 to 100
Attached	8	31	"." = 0 to 7 "L" = 8 to 38 "M" = 39 to 69 "H" = 70 to 100
Detached	11	30	"." = 0 to 10 "L" = 11 to 40 "M" = 41 to 70 "H" = 71 to 100
Elevator	8	31	"." = 0 to 7 "L" = 8 to 38 "M" = 39 to 69 "H" = 70 to 100

APPENDIX M

Semantic discussion of some house features.

Closet: childhood, people, past, study, private, possession

Thick walls in the Traditional house provided builders the opportunity to construct niches for many purposes, such as storing clothes, exhibiting vases and china, stocking books, and keeping some other personal objects for occasional uses. Everyone has a childhood story (H,H,L,L), such as the story of the cake jar on the high shelf at the grandmother's house. Climbing the shelves one by one with the help of a pillar of pillows, the child tries to reach the jar where cake and candy are stored. It is a memory from the past (M,M,L,L).

Some people leave portraits of family members, tape recorders, pencils, pins and needles, strings, and other personal possession on the closet shelves (L,H,H,H). Storing personal possessions means privacy of space is sought (M,L,L,M). The research shows (in Figure 10-23-Closet) the strong associated meanings of wall closets for both Traditional and Attached residents. However, Figure 10-5 show that wall closets are ranked below the middle of both the Traditional and the Attached lists, while it is in the middle of both the Detached and the Elevator lists. Other unshared meanings that were associated with the closet, recorded by inhabitants of the Traditional area, are symbols of religion (M), and by inhabitants of both the Traditional and the Attached areas as a signs that reminds them of study (M,H) and people (L,M).

In Damascene houses, wall closets take many forms and names: "*Maktabih*" (closet without doors), "*Youk*" (closet with curtain); "*Khurstan*" (closet with door); "*Betrina*" (the lower part has drawers and solid doors, and the upper part may have glass doors), "*khzana*" (with doors found in bedrooms for hanging clothes). *Maktabih, Youk, Khurstan* are wall closets, while *Betrina* and *Khzana* are pieces of moveable furniture. In the Traditional houses the closet can be elaborately decorated or may have a simple decorative frame. *Khzana* and *Betrina* closets are wooden and moulded with ivory, or are coloured and stained wood. *Betrina* are also made of steel without decorat'on.

Kitchen: hunger, gathering, past, people, control, privacy, responsibility

The kitchen is used by inhabitants only; guests or friends rarely enter this space. In this sense, the kitchen is a private place (M,L,L,M), kept under control (L,L,M,M). Though it is located close to the main entrance, the guest room and living area, people regard control, privacy, and security (H,H,M,H) as important by keeping the door and window of the kitchen closed while using the kitchen. Sometimes, special foods are cooked for special occasions and ceremonies (L,L,L,L). Such cooking requires considerable effort and special skill; thus, some people such as sisters, aunts, and neighbours come to help. Who does not remember such gatherings in the kitchen?

From the kitchen the smell of food penetrates the entire house, stimulating hunger (H,H,H,H). Family members gather (L,L,M,L) in the kitchen. Mother and other people (L,L,L,M) working inside the kitchen is an unforgettable image for most people. Inhabitants of Attached, Detached, and Elevator buildings also associate the kitchen with the past (L,L,M). Though this meaning is not mentioned strongly by participants, it is incorporated with the other meanings mentioned previously. As a preferred sign to talk about, the kitchen is recorded in Table 10-5 at the top of

the list; and (as shown in Figure 10-23-Kitchen), the strongly associated meanings are cited by all residents, though it is the highest in Elevator apartments.

Dining Room: gathering, study, hunger, ceremony, control, possession, privacy, security

The dining room for Damascenes is unknown as a separate space. Traditionally, food is carried on a big tray into the living room, main room, guest room, kitchen, or wherever it is desired to have the meal. In the modern designed house, the dining room becomes a separate room though people may use it for other activities. Figure 10-23-Dining Room shows few strongly associated meanings with dining room. While, in Table 10-5, a preferable sign, the dining room is recorded in the bottom of the list and increases in preference for inhabitants as one moves from the Attached, Detached to the Elevator residential areas. Whatever the form of the dining room is, it represents family gathering (H,H,H,L) for having their meals. As a place used for eating, one of its meanings is tied with feeling hungry (L,H,H,M), especially when food is nicely arranged on the table.

Food is set either on the floor, where people sit circled around it, or on a table. Inhabitants of Attached buildings associate two more meanings with the dining room: possession (M), and security (M); and they share with inhabitants of Traditional areas the meaning of study (L,M). Finally, inhabitants of Attached buildings share with inhabitants of Detached buildings feelings of control (M,L), privacy (M,L), and ceremony (M,L).

Just like the way students at school select their chair in a class and keep it throughout the study year, in the dining room family members often occupy the same seat at meal time. Fathers often sit at the end (head) of the table, while mothers sit on the other side (or whatever). It is noticeable that inhabitants of Attached buildings associate many meanings with the dining room. This could reflect the need of this space for many other uses. On the contrary, Attached apartments have generally few and small rooms, an indication of social status of occupants.

Bathroom: privacy, ceremony, sacred, childhood, people, religion, security

Muslims' obligation to pray five times a day requires ablution. "Cleanliness is part of the belief". When people were asked to give the meanings of "Bathroom", some people linked it with religion (L,L,L,L). The traditions of public baths, common before private bathrooms, are conducted inside some houses. Some people select a day, mostly Thursday night, for bathing. The bathroom is regarded as a highly private (M,M,H,H) and secure (M,L,L,M) place. So, like the bedroom, inside locks are installed for control (L,L,L,L), privacy, and security. Only in Traditional areas do bathrooms carry (M) meanings of both ceremony and memory of some people. They shares with Elevator areas meanings of sacred place (M,M), and memory of childhood (M,M). In Table 10-5, the degree of preference for bathroom is relatively high in all residential areas.[1] However, in Figure 10-23-Bathroom, there are more H and M associated meanings for residents of

[1] A small high window with rough texture glass on the door of the bathroom is always provided; it helps to indicate if some one is using the bathroom. It also helps in an emergency; it can be broken to open the door if something happens to the user of the bathroom.

Traditional and Elevator areas than for residents of Attached and Detached areas.

Entry Hall: privacy, control, social, noise,

corridor: privacy, childhood, past, social, control

The house entrance is a feature that requires special attention. First of all, it is the hinge between outside (public space) and inside (private space). When the entrance door opens onto the street or building stairs, pedestrians or stair users may be able to see inside the house. Neighbouring opposite doors may also easily penetrate visually into a neighbour's inner space. A hall is designed to prevent visual intrusion on the living zone by outsiders. In compact houses, entrances, in most cases open directly into the inner room, as shown in Chapter 6. Second, the location of the entrance determines the depth that other rooms have from outside. Such depth is important, especially for bedrooms. So, the functional activities of the entrance give meanings of control (M,L,L,M), privacy (M,.,M,.), social values (.,L,M,M), and finally noise (.,.,M,M); though these meanings are expressed differently in the four residential areas (see Figure 10-24-Entrance). As showed in Table 10-5, residents of both Attached and Detached apartments ranked entrances in the middle of the list; while residents of Traditional and Elevator houses ranked corridors lower.

Corridors are located next or at least two steps away from the main entrance. So it could follow the small entry hall. Since the corridor is used for control (M,H,H,H), privacy (L,M,M,L), noise, and to help buffer wet areas, it is always small (minium width 90 centimetre). Since it is multi-functional, Figure 10-23-Corridor shows it has few strongly associated meanings. Memory of childhood (L,.,M,.) comes from this space where children find advantage for play because they feel they are less watched by adults, and so less controlled. The residents of Detached apartments associate corridors with past activities (M), while residents of Elevator apartments associate it with social values (M), and memory of people (M). As showed in Table 10-5, the corridor is listed at the bottom among Traditional house features, while in the three modern apartments it ranks below the moderate level.

APPENDIX N

Semantic discussion of some neighbourhood elements.

Grocery Store: hunger, time, relaxation, information, gossip, crowd, students, youth, solicitors, spend money, unity,

Butcher Shop: hunger, time, information, gossip, crowd, noise, youth, solicitors, spend money, landmark, tidy, untidy

The third type of the commercial area is the corner store or a store within a commercial centre. The survey considers six kinds of corner stores: grocery store, butcher shop, bakery, fast food restaurant, pharmacy, and barber shop. Table 10-6 shows that the grocery store has similar high rank in all residential areas, while the butcher shop has a low rank in all residential areas. The popularity of the grocery store could be the necessity of people's daily visit; while the unpopularity of the butcher shop could be related to smells and flies attracted by meat and a bad reputation from many butchers being accused of dishonesty (see

Figure 10-25-Grocery, 10-26-Butcher for comparison of associated meanings). However, meanings associated with the butcher shop differ among residential areas. These are: stimuli of hunger (H,.,L,M), a place to spend money (M,.,L,H), place to gain information (H,M,.,M), a landmark (M,L,.,H), untidy (.,L,M,.), and a place surrounded with solicitors (M,.,L,M).

The meanings of corner stores are similar to shopping plazas but with different degrees of association: hunger (M,H,H,H), time (L,.,M,.), relaxation (L,L,M,.), information (L,M,H,M), gossip (L,L,H,L), crowd (L,L,L,L), students (M,.,L,L), youth (M,.,L,L), solicitors (L,M,M,M), spend money (M,H,H,H), unity (L,M,M,M)

Bakery: drink, hunger, time, gossip, information, knowledge, cigarette, pollution, crowd, noise, youth, adult, solicitors, spend money, untidy

Damascenes, like most Arabs people, consume bread with every meal, and they prefer to have it fresh. A family of five consumes about 2 kg of bread daily. Bakeries are located in every neighbourhood[2], and are almost always crowded (H,H,H,H) with adults (L,M,L,M) and youths (M,M,L,.). As shown in Figure 10-25-Bakery, bakery carries many strongly associated meanings by all residents. People wait sometimes one-to-two hours at the bakery to get fresh bread. In the summer time, people feel thirsty (drink L,M,L,M,) after the long wait in the summer heat. The long waits at the bakery makes it untidy (M,M,M,H).

Table 10-6 shows the bakery is a favourite urban element, and it is ranked high in Traditional areas, but of lower order in Attached and Detached residential areas, and low in Elevator areas. Smell of the bakery can be detected from afar, especially in Traditional neighbourhoods, where streets are curved and narrow. So the smell of baked bread tracks along them and hangs in the air. Someone said to me: "The smell makes you feel hungry (H,H,H,H) for the fresh bread"; while another complained because of long wait (time M,M,M,H). Whenever there is a crowd, the scene is interesting. From the polluted (M,.,L,M) street and the noisy crowd (M,H,H,H), a tired voice is heard begging the baker to sell him some bread quickly. Some people use the waits at the bakery to socialize, gossip (L,M,.,M), and to gain some information (L,M,.,M) and knowledge (.,M,L,.) about their neighbourhood. Other people may just smoke while they enjoy watching pedestrians and the passing solicitors (L,M,M,M,).

Fast Food Restaurant: drink, hunger, childhood, past, time, gossip, information, cigarette, crowd, noise, meeting, students, solicitors, spend money, symbol, landmark, tidy, untidy

There are three kinds of fast food restaurants: *falafel, homous, and fool*, which mainly symbolize traditional style meals (M,.,H,M). There are also other specialty restaurants, such as roasted chicken, and roasted meat (*shawerma*). The time of their daily activities is noticeable in the Traditional area (M) where schedules for opening are followed. For example, many fast restaurants start as early as 6 am and extend to 2 pm. Others open from afternoon to midnight. In the old neighbourhoods, such as

[2] To balance the daily bread needs in the city with increased population, the government constructed four big Mechanical Bakery Centres, about 13 years ago. Bread is shipped from these centres to stalls located within the residential buildings, mostly to newly built residential areas, such as in *Alzahera* and *Almaz'a*.

al-Midan and *Suk al-Jmah*, some fast food restaurants open only at night, which makes them noisy (M,M,M,.) and crowded (M,.,L,H).

Table 10-6 shows that while people in Traditional areas prefer to talk about fast food restaurants, people in the three modern areas have a lower preference. The pleasant memory attached to these places reflects peoples' desire to discuss them (see Figure 10-25-Fast Food). Fast food restaurants have the meanings of past memory (L,.,M,M) and childhood (H,.,H,M). They serve popular food that people usually have during study, at picnics, and on friday mornings. After midnight, during school and university mid-term and final examinations, fast food restaurants are sought out by hungry (M,H,H,H) young students (M,.,.,.), as well as by policemen. They fit intentions to have a great meal before study, or to end their long hours of hard study by an inexpensive meal. Students meet there (M,.,L,M), gossip (L,M,L,.), exchange information (H,M,M,.), and laugh. The voices of workers are repeatedly heard, as if it is part of the folklore, "*Wahd fool with laban and ta'a salh wahdlo wa'hod hon, yawalad*", (One plate of fafa beans with yogurt, and refill another one here, oh boy). If you do not like to enjoy this drama, then take your order away.

Though fast food restaurants are crowded only during certain hours, their meanings, to a certain degree, are similar to those of the bakery. But, generally speaking, instead of youths and adults, students and children dominate. It is sufficient to mention the degree of their associated meanings: drink (L,H,M,M), cigarettes (L,H,L,.), solicitors (M,H,H,.), spend money (H,H,H,.), tidy (L,.,M,.), untidy (L,H,L,M).

Clinic: time, God, religion, relax, crowd, meeting, spend money, landmark, art, tidy

Pharmacy: past, time, religion, knowledge, spend money, art, tidy

After visiting Damascus, a wife of a friend of mine who lives in Canada described Damascenes as "half doctors". Parents are aware of some diseases that infect children. Even for adults, people are ready to prescribe medicine to each other. Such prescriptions of course are not reliable, and so, for better treatment (relaxation,.,L,L,M) of sickness, clinics are always crowded (H,H,L,M). Clinic is a place where human weaknesses are experienced most, and where people are often heard praying for help from God (M,L,L,M). Clinics open only for scheduled hours, this makes time (L,M,H,H) an associated meaning with them. Money is a big headache for the patient, especially when skilful and famous doctors raise fees. The clinic is a place to spend money (H,H,H,M), and to "Ask God to make us with no need to visit clinic" one man said to me during one interview, while looking at the edge of the window where a number of medicines were stored. Visiting a doctor generally entails a waiting. Clinics are, therefore, places to meet people (.,L,L,M), talk to other patients, and listen to the frequent noise (L,L,L,L) of patients. Neon signs give clinics a landmark (M,L,L,M) status; though the outside appearance may not be architecturally distinctive. On the other hand, the inside of a clinic is always tidy, and even sometimes artistic (L,L,L,M).

After visiting a clinic, one ends up looking for a pharmacy to buy a prescription. People make jokes about them as "shop keepers with university certificates". Their hours of opening time (M,L,L,M) are the same as shop keepers and they are located in the same commercial areas. Pharmacies, like clinics, are tidy and clean (H,M,H,H). Some people consider their simple appearance as a piece of art (.L,L,.). the pharmacy is a place that people can obtain knowledge (L,L,.,M) about minor sicknesses to avoid spending money in clinics (H,H,H,H).

Cleaning the body and taking care of health is a religious

obligation. People, therefore, relate the meaninge of religion to both the pharmacy (.,L,.,M) and the clinic (L,L,L,M).[3] Table 10-6 shows that though both the clinic and the pharmacy are ranked high, they have different degrees of preference by inhabitants of the four residential areas. As shown in Figures 10-25-Clinic and 10-26-Pharmacy, residents of Elevator areas have stronger associated meanings with both the clinic and the pharmacy than any other residential area. Even though people visit these places far less frequently than other commercial places, they are places of lasting memory.

Coffee House: ceremony, relax, gossip, information, cigarette, crowd, noise, meeting, adult, bad people, spend money, symbol, art, tidy

Coffee houses are ranked low as shown in Table 10-6, as its popularity diminishes among residents of the four neighbourhood types. TV use has entered every household, and people do not need to listen to story tellers in coffee houses as they did 40 years ago. Another reason is the increased popularity of restaurants where women accompany men, though some of the new famous restaurants are a 15-to-40 minutes drive outside the city. Coffee houses now are present only in Traditional areas, therefore its meanings depends on the residents of this area.

Associated meanings with coffee houses are high in every type of built environment, except for the elevator area, as shown in Figure 10-26-Coffee House. Two urban elements symbolized traditional neighbourhoods: the public bath and the coffee house (H). It is well known that the Middle East is famous for coffee houses, places where adult males (H) spend their spare time for relaxation (M) meeting friends (H), sipping Turkish coffee or tea, smoking water pipes (H), and gossiping (H). People play backgammon, which has its cult, with a typical noise (H,M,M,.). Dice are shaken in the hand, breathed on, and thrown strongly on the table while calling for the wished-for number with a loud voice. Moving the game-pieces against the game-table and shouting Turkish phrases related to the move, such as "*shesh besh*", are inseparable parts of the fun. Add the noise of a startling shouts from different spots of the crowded (H,H,M,.) place when a pair of dice fall on the wished-for number.

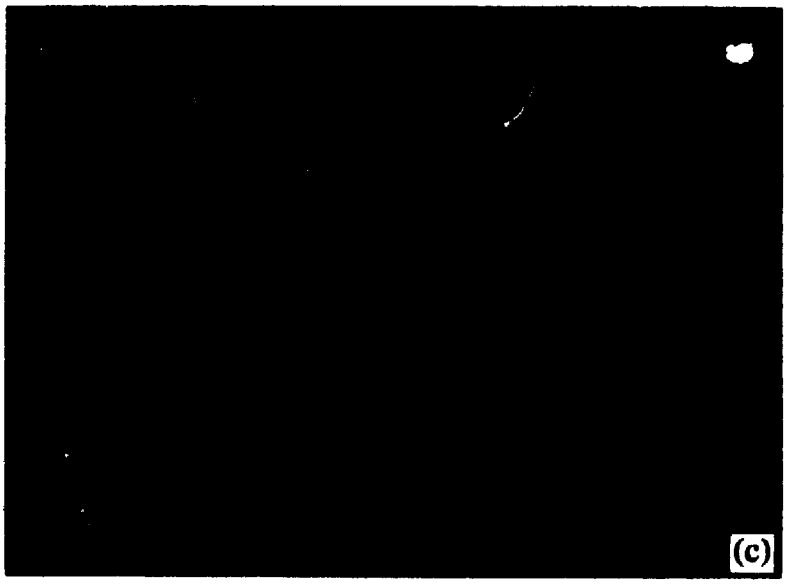
Even though respected people participate, some view this place as crowded with bad people (H,H,M,.) because two bad habits are practised: smoking water pipes and wasting time playing backgammon.

Baths: drink, hungry, ceremony, childhood, past, information, meeting, spend money, symbol, landmark, art

Many youth of the new generation do not know much about the public bath and how they function. This explains, in Table 10-6 and Figure 10-26-Public Bath, the moderate popularity of public baths in Traditional areas and low popularity in the three modern areas. So, as in the case of the coffee house, the following meanings of the public bath rely mainly on Traditional areas, Figure 10-48.

The public bath is still a place with special social meanings. It symbolizes the old tradition (H). In the past, private bathrooms did not exit, so public baths were customary (Kassab-Hassan, 1988). Public baths were opened from noon to the sunset for females; and for the rest of the 24 hours for males. People's past (M) and childhood memory (H) are always

[3] Pharmacies and clinics are distributed in the city systematically to ensure proximity to all residential areas.



Figures 10-48:

Public bath in Al-Salihia,

(a) Albarani, an outside hall where people change their cloths.

(b) Aljowani, the inside part where people bathe.

(c) Two domes cover the public bath. The small circular glass use for lighting the inside, as shown in (b). Al-Salihia, Damascus.

Photos by the author, 1983.

evoked when the public bath is mentioned. Families, relatives, and neighbours used to go together once a week to spend hours, drinking (M) and eating (hunger, M) food brought with them while bathing. Other old customs were people preparing for wedding ceremonies (H), meeting others (H), and acquiring information (M). So public baths were social places for residents of neighbourhoods.

Beside bathers' noise (L,.,L,.) there are some phrases associated with bathing: "*Naiman*" or wishing a healthy bath; "*Hammam Alhrass*" or wishing to have a bath soon for your wedding; "*Hat Manshafh La hon, Ia walad*" or bring a towel here, oh boy; and others. With the construction of private bathrooms inside houses, use of public baths now is relegated to historic and touristic significance. Existing public baths are supported and subsidized by the tourist ministry, such as *Nor al-din* Bath in *al-Bzouria*.

The remaining public baths are landmarks (M), being located in semi-public and public commercial streets. The main entrance is distinguished by a decorated stony frame that has a plaque at the top with the name and the year of its construction. The exteriors and interiors are pieces of art (M), that reflect architectural talent. When open for men, the main door is left open and lights were on. A wide open door attracted pedestrians' eyes into their distinctive interior structures (see Figures 10-41a,b,c). From the street, pedestrians view the "*Barrany*" (outer part) with bathers in white towels standing on porches surrounding the centre fountain. Natural light for most rooms comes from small circular windows punctuated in domed ceilings. Beside the "outer part" of the bath structure, there is "*Aljowani*" or the "inner hot part", used for bathing. Between the outer and inner parts there is "*Alwestany*" or the middle part used to adjust body's temperature while moving between cold and hot rooms.

Library: childhood, past, time, relax, gossip information, knowledge, crowd, meeting, spend money, symbol, landmark, art, tidy

There are few libraries in Damascus, as Table 10-10 indicates. These libraries do not supply the populations' needs for space to study or to obtain references, but people spend time and money on transportation to go to them. Among other libraries, the University Library is only for university students, and libraries related to nations' embassies, such as the British and the American educational centres, are small and accept few visitors. Names of these libraries symbolize (H,H,M,L) their associated institutions.

Table 10-10: Library names and surrounding residential types.

Library	Surrounding Residential Types
Assad Library	Detached and Elevator apts.
University Main Library	Attached and Detached apts.
Arabic Educational Centre	Detached apts.
Alzahir'a Library	Traditional houses
British Educational Centre	Detached apts.
American Educational Centre	Detached apts.

Table 10-6 shows that residents of the Traditional, the Attached and the Elevator neighbourhoods equally ranked the library, as a preferred place, in the centre of the urban element list; while residents of Detached areas ranked the library relatively high. This can be explained by proximity of libraries to Detached neighbourhoods, enhancing

opportunities for people there. Strongly associated meanings with library are marked by all residents except those of Elevator areas, as shown in Figure 10-25-Library. Though libraries are few, they are well known as landmarks (L,H,M,H); and, like school, they are places to gain knowledge (H) and information (L,M,L,.). They are kept always quiet, cool, tidy (H,H,H,M), and have artistically arranged interiors (H,M,M,L), giving the impression of comfortableness and relaxation (H,L,L,.).

The expression of time is not only noticed by the fixed opening time of libraries, but also by their level of crowdedness that peaks during school examination times. Those who have been there carry memories of the past study time (H,H,M,H), that for some go back even to their childhood (L,M,M,.). By watching the faces of people there, the purpose of their visits may be surmised. Some go there to be with the crowd (H,M,.,L), or to meet (M,M,M,.) friends; and some watch others and quietly gossip (.,M,.,.).

Museum: childhood, past, time, relax, meeting, symbol, landmark, art, tidy

Visiting museums or historical places is not customary for Damascenes, as shown in Figure 10-25-Museum. What is the need for visiting "Museums" when Damascus itself is a big museum? It was built a thousand year ago, and its old city has historical elements that belong to Roman, Byzant, and Muslim eras. There are few strongly associated meanings. The least preference is recorded by residents of elevator areas. Most of the visitors are tourists. School students do visit museums as a part of their school activities, which creates part of childhood memory (L,.,M,.). Residents of Traditional and Detached areas ranked the museum, as shown in Table 10-6, below the middle of their lists of urban elements. While residents of Attached and Elevator areas ranked the museum in the bottom of their lists.

The two well known museum in Damascus are the National Museum and the War Museum. They are located in the centre of the city, on the northwestern side of the University. Because of their location and large open spaces, they attract visitors, students, and the general public who find their gardens good for relaxation (M,.,.,.) and for meeting (M,.,.,.) friends. The Citadel, the Umaiyad Mosque, the Alahzom house, the Alshami house, and other old mosques, churches, public baths, and houses, are all located in Old Damascus. The associated meanings with museums are: symbol (H,M,M,M), landmark (L,M,H,M), artistic (H,M,H,.), tidy (L,.,M,.) and places that remind of times (.,M,L,L) and the past (H,.,H,.) of several old civilizations.

Fountain: drink, ceremony, sacred, God, religion, childhood, past, relax, meeting, youth, symbol, landmark, art, tidy

Almost in every Traditional private and public building there are fountains located inside. On the other hand, in outdoor spaces, fountains exist in combination with drinking fountains. Traditional outdoor fountains are built with an upper level for pedestrians and a lower level for horses. Today, Traditional outdoor fountains are mostly empty or filled with concrete to prevent dumping trash into them. In modern areas, fountains are mainly constructed for aesthetic appearance, are built in parks, at intersections, and on street islands. Locations, numbers and shapes of fountains are not decided by the city. So, fountains may be built after twenty years of developing the residential area. For example, New Damascus, al-Mazzah was built two decade ago. Only in 1990, was it decided by the mayor, Abou Alshamat, to build a number of fountains on the island of the main street. The delay in building fountains in modern areas

should not be looked at as a result of a poor planning, but as a result of the tight budget and the re-evaluation of the city's planning and beauty.

The degree of preference for fountains is low in Traditional, Attached, and Detached areas, while it ranks very low in the Elevator areas. However, the associated meanings are many, as shown in Figure 10-25-Fountain. The fountain is not only a water holder, but also a beautiful artistic (H,H,H,H) structure. The shape and decorations of the water fountain are borrowed from traditional fountains, which makes them a symbol of the past (M,M,H,M). The beauty of fountains attracts people to meet (M,L,L,M) and relax (M,L,L,M) beside them, and to enjoy cool air.

Other meanings of the fountain are similar to meanings associated with drinking fountains, but with different degrees of intersubjectivity; these are: drink (H,H,H,H), ceremony (.,L,L,M), sacred (.,M,.,.), God (.,M,.,.,), religion (M,M,.,.), childhood (M,L,L,.), youth (.,L,L,M), symbol (M,M,H,M), landmark (.,M,M,.), tidy (.,M,L,M).

Door / Gate: ceremony, sacred, past, time, relax, information, gossip. noise, meeting, students, youth, adult, tidy,

Historically, Damascenes used doors on alleys for defence and security for their neighbourhoods. Recently, these doors have disappeared. Only parts of doors remain, if any. This disappearance can be explained by changes in need for security and by changes in the city's social structure. In all alleys there used to reside a single large family with relatives or close friends. Nowadays, most of the house rooms are rented for many different poor families, or for storage. Thus, deterioration has increased rapidly, affecting both the interior and the exterior structures of Traditional houses, including the doors of alleys[4]. People do not maintain the exterior when they have neither the money nor the responsibility for such work. When inhabitants do not experience the benefit of the door of the alley, the degree of their preference is accordingly ranked low, as shown in Table 10-6. However, some people still observe the door as a symbol of the past (L) and as an artistic object (L) that is enhanced with the use of decorative big-stamp nails all around the door. Its size might be distinctive enough sometimes to constitute a local landmark (L). As shown in Figure 10-26-Gate, there are many strongly associated meanings attached to the door/gate of Traditional areas.

modern built environments, all buildings have fences, but are without doors (or gates) (see Figures 10-49). Gates are installed by a joint effort of the inhabitants. With the introduction of interphones, people have increasingly started to install gates for their buildings. The level of family income decides wether inhabitants use gates and interphones. Inhabitants of Detached apartments generally have higher income than inhabitants of Attached and Elevator apartments, as the size of the houses, shown in Chapter 6, implies. Buildings in Detached neighbourhoods use gates more than in Attached and Elevator areas. In some cases, especially in Elevator apartments, porters take care of building security and cleanness.

[4] In 1990, the city hall ordered all inhabitants of the old city to paint their exterior walls white, and to cover about 130 cm of the lower part of these walls with cement plaster.

Figures 10-49:

Views of fences of Elevator buldings.

(a) Inside fence gardens can be used by all residents. Aladawi, Damascus.

(b) Areas inside fences are ideal places for parking cars and for childern to play with their neighbours. Aladawi, Damascus.

(c) Overview of a number of Elevator buildings. They have gates and interphones to provide security to residents. Alzahera, Damascus.

Photos by the author, 1991.

Table 10-6 shows that people in Detached apartments favour fences and gates more than Attached and Elevator occupants[5]. Gates and fences help to keep buildings clean and tidy (M,H,M); and create safe zones for youngsters (.,M,H) to meet (M,M,M) and play, creating noise (M,M,M). They also provide places where school students (.,M,H) crowd after school. Presence of school students and other children there mark time (M,.,.) of day and characterize weekends. Adults (L,.,L) also encounter each other, gossip (.,M,M), and exchange information (.,M,L) about problems related to the building and other matters, leaving memories of the past (M,M,L).

Once one passes the fence or the gate of his/her building apartment, the attitude toward space changes. Outside the fence, one has no right to interfere with other people's business. He/she can not ask a pedestrian on the street "who are you, and what are you doing there". On the contrary, inside the fence, inhabitants feel comfortable and relaxed and have such a right (.,M,H). Residents are encouraged to work together to ensure clean, quiet, and well-planted inner areas or gardens. Inside fences are beautified with plants and trees, that symbolize the heavenly ideal (M,H,M). In Elevator buildings, inside fences are large enough to construct park-like landscapes.

Bus Stop: thirst, hunger, past, time, relax, gossip, cigarette, pollution, crowd, noise, bad people, solicitor, untidy

Bus stops are places where people crowd (H,H,H,M), waiting for buses or taxis. Therefore, many meanings are strongly associated with bus stops, as shown in Figure 10-25-Bus Stop. Long waits are not fun; the street is noisy (M), polluted, and dusty (H,M,H,M). Some people socialize, talk, gossip (L,M,H,L), and enjoy watching others. Others light cigarettes (H,M,H,M) regardless of complaints from others. Noise, pollution, and cigarette smoke are not the only source of headaches at bus stops. Stares from young men add displeasure to others, who sometimes associate young men as bad people (H,M,L,L).

Peddlers take advantage of bus stops, particular downtown and in the university areas, to sell soft drinks and light food. Some people associate thirst (H,M,.,L) and hunger (M,L,L,L) with bus stops. The related activities of drinking and eating always result in a dirty spot (H,H,M,M) around the bus stop. One can tell from the size of the crowd the approximate time of the day (H,H,H,H).

Table 10-6 shows the buc stop ranked in the middle of the list for the Detached neighbourhood; while in both the Attached and the Elevator neighbourhood lists, the bus stop is ranked as one of the highest elements. In the Traditional neighbourhood list, as in the Detached neighbourhood, the bus stop is ranked in the middle. This could be attributed to two reasons: 1) bus stops are frequently far from home (one has to walk up to 15 minutes in some cases. 2). The largest part of the

---

[5] One of the most successful systems to ensure more security to neighbourhoods, used in various parts of North America, is called "Neighbourhood Watch". This system was initiated in Britain in the 1930s. The program did not come to North America until 1966. The first program was started in Oakland, England, between the police and a citizen crime prevention group. The purpose of the program is to tip police on crimes while they are been committed. Every block in the district has one person designated to attend monthly meetings. This person passes new information by word of mouth to his neighbours. The police felt that if the police are informed, they can be more helpful; thus, in these meetings people are given tips about recent rapes, robberies and auto theft. Now people take the necessary precautions to defend themselves. Another part of the program is the increase in community relations among each other. If someone on the block is going away then the neighbours will keep watch on the house while they are gone, and will collect mail and newspapers (Bennett, 1990).

old city is within the walking distance to commercial areas.

Stairs: drink, hunger, ceremony, childhood, past, relax, information, gossip, cigarette, noise, meeting, student, youth, adult, tidy, untidy.

Elevator: ceremony, childhood, past, time, relax, cigarette, meeting

Houses, as highly private, are preceded by semi-private, semi-public, and/or public zones. The semi-private space is defined as a dead-end street, where inhabitants may question strangers entering this space. In Modern residential areas, houses are built one above the other, and residents share stairs and/or elevators. Similar to dead-end spaces, stairs and elevators can be readily identified and also can be seen as analogous to traditional doors in alleys.

In Traditional areas, people enter their houses up one or two steps higher or lower than street level. There are a few exceptions where high stairs are needed. These exceptions relate to hilly sites, such as the Alasadia, Alkadi, and Sefl-altela areas. Generally, stairs in Traditional areas are not present since houses are built close to street level. The meanings given to elevators and stairs are simply not dependable for the residents of traditional areas.

Residents of Attached and Detached buildings give high preference for stairs, while residents of Elevator apartments also favour stairs highly, but to lesser degree (see also Figure 10-26-Stairs, and 10-26-Elevator). The elevator, the other option to reach the apartment in Elevator buildings, is ranked higher than stairs.

Climbing stairs is different, especially for those carrying groceries or having poor health. Some people sit on the stairs to relax (M,L,H) before reaching their destination. The frequent use of stairs and elevators makes them important social spaces; they encourage socialization and meeting of residents (M,L,L), whether adult (.,L,L), young (H,M,M), or students (M,M,H), and, being protected from the street, also encourage neighbours to stand in front of their house entrances to gossip (L,M,L), and exchange information (H,M,M). Since the street is a danger zone for children's play, some parents encourage children (M,M,M) to play on the stairs. Such activities make stairs noisy (M,L,L) and dirty (H,L,L). And being confined space, cigarette (L,.,M), perfume, and cooking odours are common. Regarding the smell of food, some people see approaching the stairs as stimuli for hunger (L,.,M) and drink (M,L,L), as they arrive home where food is ready.

Since elevators exist only in Elevator residential areas, data were collected only from these areas (see Figure 10-26-Elevator). Meanings of elevators are similar to those mentioned for stairs previously. Elevators are reminders of childhood (H) and the past (M), just as stairs are reminders of childhood (M) and the past (M). However, elevators have other advantages and disadvantages. Elevators are more convenient and relaxing (M) to use, but they are not always mechanically reliable. Questions concerning maintenance and cleaning are common. For some people, riding an elevator is like taking a short journey, they light cigarettes and enjoy their trip (M). Others fix eyes at light signs of floor level, and count down voicelessly "5, 4, 3, .., 0".

GLOSSARY

Al-: An article meaning "the".

Allah: The Arabic translation for the word God. It is used by Muslim as well as Christian and Jewish.

Barani: A guest room. The exact meaning is the outside room referring to the room that follows the entrance.

Bab: A door or a gate, such as Bab al-Zakear, one of walls' gates of Damascus.

Barada: The river that flows through Damascus.

Bazaar: A commercial area or a downtown area that, in general, has covered streets and is divided into sub-Bazaars called Aswak (see Suk).

Ard-Dar: Inner courtyard.

Faier, Zher, Azer, Maghrab and Ish'a:

The times of a day when Muslims pray (that is favoured in a mosque). This time divides the day into five parts according to the sun's movement; Faier is the time before the sunrise when the horizon is still dark; Zher is noon or when a vertical object's shadow on the earth is shortest; Azer is the time when a vertical object's shadow on the earth is twice as long as its length; Maghrab is the time after the sun sets when the sky is still bright; and Ish'a is the time after the sunset when the sky becomes completely dark (except for the moon light).

Gota: The natural green area that surrounds Damascus in the eastern and southern sides.

H.: An abbreviation for the Hei're meaning the messenger's, Mohammed, migration from Mecca to al-Medina, Saudi Arabia, which is considered the beginning of the Muslim calendar.

Hai: [pl. Ah'ia'] A residential quarter that has its own government representative, al- Mokh'tar, who is one of the Hai inhabitants.

Hara: [pl. harat] Sub-quarter or the secondary artery of the Arabic cities' road network. In this thesis Hara is called Zone 1 (see zwkak).

Iwan: [pl. Iwanat] A room that has an open side facing north. It is used

during the summer days.

Jamhe: A small mosque that is located either in the commercial or residential areas. In the commercial area, al-Jamhe is used for Zhor, Asor, and Maghrab prayers while in the residential area, it is used for all praying times except for Friday Prayer. (see al-Masjad al-Jamhe)

Ka'a: The biggest room in a house; its ceiling is two floors in height. It is used mainly for big parties, such as gatherings of relatives.

Kasser: A luxurious house; such as Kasser al-Azem, which was owned by a big family near the Umaiyad Mosque, Damascus.

Kassion Mountain: The word Kassion means blond and is used to describe a mountain which has no trees or green spots. This mountain forms the western boundary of Damascus.

Medina: The Arabic name for a city and is also the name of the city in which the prophet, Mohammed formed the early Islamic civilization after migrating from Mecca.

Madrasah: [pl. Madaress] A school.

Maktaba: A library.

Mashrabia: [pl. Mashrabiat] A lattice window made mainly from wood, having a variety of shapes. (see the page following page 102)

Al-Masjad al-Jamhe: A mosque where prayer occurs five times every day, including Friday prayer. It is usually a big building and used for both commercial and residential areas. (see Jamhe)

Mecca: The holy city in Saudi Arabia where Muslims make pilgrimage and which they face when they pray to God.

Midan: A place where some sport activities occurred in ancient times, and where the caravans gathered before entering or leaving the city. It also means a battleground.

Minaret: A tower built on a mosque. It has a balcony in its upper part where al-Muezzin declare the praying time. (see Muezzin)

Jan'nah: A paradise or a garden in heaven awarded to those who follow God's orders that are indicated in the holy book, the Our'an.

Qur'an: The Muslim holy book which was sent from God through Jebril to the messenger Mohammed.

Sibat: [pl. Sibatat] A room that is built above an alley.

Space: It is used in this research in a modern concept that is in relative sense where all objects are spatial entities constituted by their contexts, locations, and time.

Suk: [pl. Aswak] A Bazaar's sub-division that is specialized for only one kind of purchase, such as jewellery, shoes, and spices.

Tabla: A musical instrument

Zwkak: [pl. Azwka] Sub-sub-quarter or the third artery of the Arabic cities' road network. It usually has a dead-end. In this thesis Zwkak is called Zone 2 (see Hara).

BIBLIOGRAPHY

Abler, R., Adams, J. and Gould, P. (1971). Spatial organization: the Geographer's view of the world. Englewood Cliffs.

Alrefai, Anoir (1977). History of Art During Arabs and Muslims. Damascus: Dar Alfiker. (Arabic Issue)

Alsayyad, N. (1986). "Notes on the Muslim city: Physical Aspects", in The Cost of Not Knowing: Proceeds of the 1986 EDRA Conference. Edited by J. Wineman, R. Barnes and C. Zimrig. Madision: Omni press, pp. 15-22.

Agnew, John A. Mercer, J. and Sopher, D. (eds.) (1984). The City in Cultural Context. Winchester, Mass.: Allen & Unwin.

Akbar, Jamel (1988). Crisis in the Built Environment: a Case of the Muslim City. U.S.A., Mass.: Concept Media Pte Ltd.

Alexander, Christopher, et. al., (1977). A Pattern Language. New York: Oxford Univ. Press.

Altentawi, Ali (1959). Damascus. Damascus: Dar Alfiker. (Arabic Issue)

Altman, Irwin, et. al., (1980). Culture and Environment. Monterey, Calif.: Books/Cole.

American Heritage Dictionary (1986).

Appleyard, Donald (1964). Livable Streets. Berkeley: University of California Press.

Arnold, William E. & Hirsch, Robert O. (eds) (1977). Communication Through Behaviour. New York: West Pub.

Atil, Esin (1975). Art of the Arab World. Washington D.C.: Smithsonian Institution.

Banani, Amin and Vryonis, Speros (eds.) (1975). Individualism and Conformity in Classical Islam. Los Angeles: University of California.

Barthes, Roland (1964). Elements of Semiology. Translated by A. Lavers and C. Smith. New York: Hill and Wang.

Bell, G. Randall, E., & Roeder, J.E.R. (1973). Urban Environments and Human Behaviour: An Annotated Bibliography. U.S.A. and Canada: Dowden, Hutchinson & Ross, Inc.

Al-Bayati, Basil (1983). Community and Unity. New York: St. Martin's Press.

Bennett,T. (1990). Evaluating Neighbourhood Watch. Worcester, England: Gower Publishing Company Ltd.

Bishai, Wilson B. (1973). Humanities in the Arabic-Islamic World. Iowa: Bubuque, Wm.C. Brown Company Publishers.

Bjorklund, E.M. (1983). "Behaviour as a Spatial search", in Ontario Geography, Dept. of Geography at U.W.O., No. 21, pp.85-100.

---------- (1986). "Humanism and Geography: a Bridge Between Humanism and Science", in Discussion Paper No. 3, edited by Suzanne Mackenzie. Department of Geography, Faculty of S.S., Carleton University, Ottawa, Canada.

---------- (1991). "Culture as Input and Output of the Cognitive-Linguistic Process", in Cognitive and Linguistic Aspects of Geographic space, edited by D.M. Mark and A.U. Frank. Netherlands: Kluwer Academic Publishers, 65-69.

---------- (1992). Geographical Semiotics in Canadian Urban Environments. Unpublished paper presented in "Canadian Studies Association", September 26, Grey Rocks Inn, St. Jorite, Quebec.

Bjorklund, E.M. and Philbrick, A.K. (1975). "Spatial Configuration of Mental Process", in Les Regions Qu'il Faudrail Faire, Notes et Documents de Richerche No. 6. Department de Geographie, Universite Laval, Decembre, pp. 57-77.

Branca, Albert A. (1966). "Language and Communication", in Psychology: the Science of Behaviour. Boston, Atlanta, et. al.: Allyn & Bacon, Inc., ch. 12, pp. 329-356.

Breshna, Abdullah, "What is Meant by Development?", in Architectural Education 2: Architecture for Developing Countries. Edited by Stephen Trombley. pp. 15-26.

Broadbent, G. (1969). "Meaning into Architecture", in Meaning in Architecture, by C. Jencks & G. Baird, (eds.). New York: Braziller.

---------- (1973). "Communication", in Design in Architecture. London, Sydeny, Toronto: John wiley & Sons.

---------- (1974). "Buildings Design as an Iconic Sign System", in Chatman, et. al., Op. Cit, pp. 904-908.

Broadbent, G., Bunt, R. & Jencks C. (eds.) (1980a). Signs, Symbols, and Architecture. New York, Chichester, Brisbane, Toronto: John Wiley & Sons.

Broadbent, G., Bunt, R. & Liorens. T. (ed.) (1980b). Meaning and Behaviour in the Built Environment. New York, Toronto: John Wiley & Sons, Ltd.

Broadbent, G., et. al., (eds) (1980). Meaning & Behaviour in the Built Environment. Toronto: John Wiley.

Burckhardt, Titus (1976). Art of Islam: Language and Meaning. London: World of Islam Festival Publishing Company Ltd.

Cavaglieri, Giorgio (1980). "The Harmony that Can not be Dictated", in National Trust for Historic Preservation. Washington, D.C.: The Preservation Press.

Chatman, S., Eco, U., & Klinkenberg, J. (1974). A Semiotic Landscape. New York, Paris: Mouton Publishers.

Cosgrove, D. & Daniels, S. (eds.) (1988). The Iconography of Landscape. New York: Cambridge University.

Cybriwsky, Roman A. (1978). "Social Aspects of Neighbourhood Chance", in Annals of the Association of American Geographers, Vol. 68, No. 1, March, pp. 17-33.

Dhmane, M. Ahmad (ed.) (1980). The History of al-Salihia for Iben Tolon. Damascus: Dar Abou-Baker. (Arabic Issue)

---------- (1981). Damascus' Governors During the Mamaluk Period. 2nd edition. Damascus: Dar al-Fiker. (Arabic Issue).

Deely, Jogn (1982). Introducing Semiotics: Its History & Doctrine. Bloomington: Indiana Univ. Press.

De Ventos, Xavier Rubert (1980). "The Sociology of Semiology", in Signs, Symbols, & Architecture. By G. Broadbent, et. al. (eds). New York: L. Wiley & Sons, pp. 169-202.

Downs, R.M. and Stea, D. (1973). Image and Environment: Cognitive Mapping and Spatial Behaviour. Chicago: Aldine.

Duncan, J. (1976). "Landscape and the Communication of Social Reality", in The Mutual Interaction of People and the Built Environment: a cross cultural perspective. Edited by Amos Rapoport. Chicago: Aldine. Paris: Mouton Publishers. pp. 391-401.

---------- (1987). "Review of Urban Imagery: Urban Semiotics", in Urban Geography. 8, 473-83.

Eco, Umberto (1976). A Theory of Semiotics. Bloomington: Indiana University Press.

Eco, U., Santambrogio, M. and Violi, P. (eds.) (1988). Meaning and Mental Representations. Bloomington: Indiana University Press.

Ecochard, Michel (1981). "Damascus", in The Arab City: its Character and Islamic Cultural Heritage. Edited by Ismail Serageldin and Samir El-Sadek. Arlington, Virgina, U.S.A.: Ismail Serageldin, pp. 93-99.

Eyles, J. & Evans, M. (1987). "Popular Consciousness, Moral Ideology, & Locality", in Environment & Planning D: Society & Space. 5, 39-71.

Fat'hi, Hassan (1973). "Beyond the Human Scale", in AAQ, vol. 6, no. 3, pp. 53-57.

---------- (1982). "Arabic House", in Al-Fiker Al-Arabi: the city's problem and the Arabic city. No. 29. (Arabic Issue)

Fawcett, Robin P., et. al. (eds) (1984). The Semiotics of Culture and Language. Vol.2. London: Frances Printer.

Fellicoe, G. and Jellicoe, S. (1975). The Landscape of Man. New York. London: Van-Nostrand Reinhold Company.

Ferwati, M. S., et al. (1982). Damascus Inside the Walls. Unpublished Bachelor's Thesis. Damascus University.

---------- (1988). A City's Cry for Survival. Unpublished Master thesis. The University of Kansas, Lawrence, Kansas.

Fisher, J.D.; Bell, P.A. & Baum, A. (1984). Environmental Psychology (2nd ed.). New York, Toronto, London: Holt, Rinehart and Winston.

Foote, K. (1983). Color in Public Spaces: Toward a communication-Based theory of the urban built environment. Chicago: University of Chicago Press, Dept. of Geography. Research Paper No. 205.

Fried, M. and Gleicher, P. (1961). "Some Sources of Residential Satisfaction in an Urban Slum", in American Institute of Planners, Journal 27, pp. 305-315.

Garroni, Emilio (1980). "The Language of Architecture", in Signs, Symbols,

& Architecture. Edited by G. Broadbent, et, al. Toronto, New York: Jogn Wiley & Sons, pp. 379-410.

Gehl, Jan (1987). Life Between Buildings: Using Public Space. Translated by Joe Koch. New York: Van Nostrand Reinhold Company.

Gergen, K. & Gergen, M. (1986). Social Psychology, (2nd ed.), U.S.A.
Gillan, Garth (1982). From Sign to Symbol. New Jersey: The Harvester Press.

Goffmann, Erving (1959). The Presentation of Self in Every Life. Garden City, N.Y.: Doubleday & Co.

Gold, John R. (1980). An Introduction to Behavioral Geography. Oxford: Oxford University Press.

Golledge, R. G. and Stimson, R.J. (1987). Analytical Behavioral Geography. New York: Groom Helm.

Goodey, B. and Gold, J.R. (1987). "Environmental Perception: the Relationship with Urban Design", in Progress in Human Geography, vol. 1, pp. 126-133.

Gottdiener, M. (1963). Behaviour in Public Places. New York: The Free Press of Glenco.

Gould, Peter and White, Rodney (1974). Mental Maps. Middlesex, England: Penguin Books.

Grabar, Oleg (1973). The Formation of Islamic Art. New Haven: Yale University Press.

Greenbie, Barrie B. (1981). Space: Dimensions of the Human Landscape. Newhaven and London: Yale University Press.

Greimas, Algirdas Julien (1990). The Social Sciences: A Semiotic View. Minneaplois: University of Minnesota Press.

Guiraud, Pierre (1975). Semiology. London: Routledge & Kegan Paul.

Hakim, Bessim Selim (1986). Arab Islamic Cities. London: Building and Planning Principles K.P.I.

Al-Halak, A. B. (1954). Daily Events of Damascus: 1741-1762. Damascus: Al-Bian al-Arabi Association. (Arabic Issue)

Hall, E.T. (1966). The Hidden Dimension. Garden City, New York: Doubledey and Company.

---------- (1983). The Dance of Life: the other dimension of time. New York: Anchor Press/Doubleday.

Hart, R.A. (1974). "The Genesis of Landscaping: Two Years of Discovery in a Vermont Town", in Landscape Architecture. no 65, pp. 356-363.

Hartmann, R (1913). The Encyclopedia of Islam, vol. I. London: Luzac & Co., pp. 902-910.

Hatch, C. Richard (ed.) (1984). The Scope of Social Architecture. New York, Toronto: Van Nostrand Reinold Company.

Hemssi, Ahmad Fa'hz (1982). Monuments From the Arabic-Islamic Architecture in Syria. Damascus:Al-Awkaf Ministry.

Herbert, Lynden (1972). A New Language for Environmental Design. New York University Press.

Hesselgren, Sven (1974). "The Holy Trinity, the Structure of the Process of the Visual Perception of Architecture", in A semiotic Landscape. Edited by S. Chatman, U. Eco, and J-M Klinkendberg. Paris: Mouton Publishers. pp. 936-943.

Hillier, B. & Hanson, J. (1984). The Social Logic of Space. New York, London, etc.: Combridge University Press.

Hiss, Tony (1990). The Experience of Place. New York: Knopf publisher.

Hoag, John D. (1975). Islamic Architecture. New York: Harry N, Abrams.

Hopkins, J.S.P. West Edmonton Mall: Landscape of Myths and Eleswhereness. McGill University, Dept. of Geography, Montreal, Quebec. (unpublished)

Hourani, A. (1970). "The Islamic City in Light of Recent Research", in The Islamic City. Edited by Hourani and S. Stern. Oxford: Bruno Cassirer, pp. 9-29.

Ibn-Touloun, Mohammed (1980). al-Kala'ed al-Jowharia. New edition by M. Ahmad Dahmane. Damascus: Dar Abibaker. (Arabic Issue)

Ismail, A. (1972). "Origin, Ideology and Physical Pattern of Arab Urbanization", in Ekistics, no. 195, p.120.

Jaban, M. Bashir (1985). "The Damascus' House and an Attempt for its Development", in Al-Mouhandis al-Arabi. Journal issued by order of Syrian Engineers, no. 84, pp.47-51.

Jacobs, Jane (1961). The Death and Life of Great American Cities. New York: Random House.

Jencks, C. & Baird, G. (1969). Meaning in Architecture. London: Compton Printing Ltd.

Jairazbhay, R. A. (1964). Art and Cities of Islam. New York: ASIA Publishing House.

Johnson-Laird, Philip N. (1983). Mental Models: Towards a Cognitive Science of Language, Inference and Consciousness. Combridge, Mass.: Harvard University Press.

Kahn, Lloyd (ed.) (1973). Shelter. Santa Barbara, Calif.: Mountain Books.

Kaier, Safoh (1979). Damascus City: Study in geographic Cities. Damascus, Syria: The Ministry of Literalness. (Arabic issue)

Khalidi, Tarif (1985). Classical Arab Islam. Princeton, N.J: The Darwin Press, Inc.

Klapp, Merrie (1974) "Syntactic and Semantic Considerations in the Semiotic Analysis of Social Message Appearing as Physical Urban Structure and Use", in A Semiotic Language. Edited by Chatman, S., Eco, U., & Klinkenberg, J. New York, Paris: Mouton Publishers, pp.945-952.

Klengel, Horst (1972). The Art of Ancient Syria. Translated from German by Joan Becker and South Brunswwick. A.S. Barnes.

knox, Paul L. (1987). "The Social Production of the Built Environment: Architects, Architecture, and the Post-Modern City". In Progress in Human Geography. 11,3, pp. 345-377.

Kobayashi, A. (1989). "A critique of Dialectical Landscape", in Remaking Human Geography. Edited by A. Kabayshi & S. Mackenzie. London: Unwin Human, pp. 164-183.

Kourd-Ali, M. (1982). Khtat al-Sham. Damascus: Maktabat al-Noury. (Arabic Issue)

---------- (1983). Damascus: the city of witchcraft and Poetry. 2ed Edition. Damascus: Dar al-Fiker. (Arabic Issue)

Krampen, M. (1979). Meaning in the Urban Environment. London: Pion Ltd.

Krupat, Edward (1985). People in Cities: The Urban environment and its Effects. Mass.: Combridge University Press.

Ladd, F. (1970). "Black Youths View their Environment: Neighbourhood Maps, in Environment and Behaviour. No.2, pp.74-99.

Lagopoulos, Alexander-Phaedon (1975). "Semiological Urbanism", in Shelter, Sign & Symbol. Edited by Paul Oliver. London: Barrie & Jenkins.

Lampugnani, M. V. (ed.) (1985). Encyclopedia of 20th-Century Architecture. New York: Harry N. Abrams, Inc., Publishers.

Lange-Seidl, Annemarie (1977). Approaches to Theories for Non-Verbal Signs. Lisse: The Peter De Ridder Press.

Lapidus, Ira M. (1969). The Middle Eastern City. Los Angeles: California Press.

---------- (1973). "Evolution of Early Muslim Urban Society", in Comparative Studies in Society and History, vol. 15, pp. 21-50.

Laurendeau, Monique and Pinard, Adrien (1970). The Development of the Concept of Space in the Child. New York: International University Press.

LeCorbusier (1980). The Modulor: a harmonious measure to the human scale universally applicable to architecture and mechanics. Translated by Peter De Francia & Anna Bostock. U.S.A.: Jeannerst-Cris, Charles Edouard.

Lefebvre, Henri (1991). The Production of Space. Translated by D. Nicholson-Smith. Oxford: Basil Blackwell.

Lehrman, Jonas (1980). Earthly Paradise: Garden and Courtyard in Islam. Los Angeles: University of California Press.

Livingstone, D. & Harrison, T. (1981). "Meaning through metaphor: Analogy as Epistemology" in Annals of the Association of American Geography, 71, pp. 95-107.

Lowenthal, David (1972). Environmental Structures: Semantic and Experiential Components. Publication in Environmental Perception, no. 5. New York: American Geographical Society.

Lynch, Kevin (1960). The Image of the Cities. Mass.: MIT Press.

---------- (1966). "The City as Environment": The task of the planner is to make the city not only efficient but also humanized, in Cities. Edited by Alfred, A. Knopf. New York: Alfred A. Knopf, Inc., pp. 192-202.

---------- (1972). What Time is this Place. Cambridge, Mass.: MIT Press.

---------- (1981) The Language of City Patterns, in Good City Form. Cambridge: MIT.

Malandro, Loretta A., &Larr L. Baker (1983). Non-Verbal Communication. Don Mills: Addison-Wesley Pub.

Michelson, William (1977). Environment Choice, Human Behaviour, and Residential Satisfaction. New York: Oxford University Press.

Middlebrook, P.N. (1974). Social Psychology and Modern Life. New York: Alfred A. Knopf.

Moles, A.A. (1972). Theorie des Objects. Paris: Editions Universitaires.

Moore, Eric G. (1972). Residential Mobility in the City. Commission of College Geography, Resource Paper No. 13, Association of American Geographers, Washington, D.C.

Morris, C. (1938). Foundations of the Theory of Signs. International Encyclopedia of Unified Science, Vol. 1, No. 2. Chicago: University of Chicago Press.

---------- (1955). Signs, Language, & Behaviour. New York: G. Braziller.

---------- (1964). Signification and Significance: the study of the relations of signs and values. Mass.: MIT.

---------- (1971). Writings on the General Theory of Signs. The Hague. Paris: Mouton & Co.

Mumford, Lewis (1958). The Culture of Cities. London:Secker and Warbury.

National Geographic Atlas of the World (1990).

National Trust for Historical Preservation (1980). Old & New Architecture. Washington D.C.: The Preservation Press.

The New Canadian World Atlas (1986).

Newman, Oscar (1972). Defensible Space: Crime prevention through urban design. New York: Collier Books.

Norberg-Schulz, C. (1971). Existence, Space, and Architecture. New York: Praeger Publishers.

---------- (1974). Intention in Architecture. Mass. MIT.

---------- (1984). Genius Loci. New York: Rizzoli International Publications, Inc.

Ogden, C.K and Richards, I.A. (1989). The Meaning of Meaning: a Study of the Influence of Language upon Thought and of the Science of Symbolism.

Oliver, Paul (1987). Dwellings: the house across the world. Austin: Univ. of Texas Press.

Onibokun, A.G. (1974). "Evaluating Consumer's Satisfaction with Housing", in American Institute of Planners, Journal 40, pp.189-200.

Osgood, C., et al. (1957). The Measure of Meaning: Related to Semantic Approach. Urbana, Illinois: University of Illinois.

Peirce, C.S. (1955). Philosophical Writings of Peirce. New York: Dovor.

---------- (1957). Essays in the Philosophy of Science. Edited by Vincent Tomas. New York: Liberal Art Press.

---------- (1958, 1960). 1931-35 Collected Papers of Charles Sanders Peirce. Edited by Charles Hartshorne, Paul Weiss, and Arthor Burks. Cambridge, Mass.: Harvard University Press.

Pelc, Jerzy (1981). "Theoretical Foundations of Semiotics", in American Journal of Semiotics. Vol. I, no. 1-2, pp. 15-45.

Piaget, Jean (1960). The Child's Concept of Geometry. New York: Basic Books.

Porteous, Douglas J. (1987). "Deathscape: Malcolm Lowry's Topophobic View of the City", in The Canadian Geographer, vol.31, no. 1. pp.34-43.

Powers, William T. (1979). Behaviour: The Control of Perception. Chicago: Aldine Publishing Co.

Pred, A. (1983). "Structuration & Place: on the Becoming of Sense of Place & Structure of feeling", in Journal for the Theory of Social Behaviour, 13, pp. 45-68.

Preziosi, Donald (1979a). The Semiotics of the Built-Environment. Bloomington, Indiana: Indiana University Press.

---------- (1979b). Architecture, Language, and Meaning. The Hague. New York. Paris: Mouton Publishers.

Prochazka, Amjad Bohumil (1986). Architecture of the Islamic Cultural Sphere. Switzerland: MARP, Muslim Architecture Program. Vol. 1.

Oukasha, Therwat (1977). The Pillars of Beauty in Islamic Architecture. Cairo: Dar al-Maaraf. (Arabic Issue)

Rapoport, A. (ed.) (1976). The Mutual Interaction of People and Their Built Environment: A Cross-Cultural Perspective. Paris: Mouton Pub., The Hague. Distributed in the U.S.A. and Canada by Aldine, Chicago.

---------- (1977). Human Aspect of Urban Form. New York, Toronto: Pergamon Press.

---------- (1982). The Meaning of the Buil Environment: A nonverbal communication approach. Beverly Hills, London, New York: Sage Publications.

Al-Refahi, Anwar (1977). Arab's and Muslim's History of Art. 2ed edition. Damascus: Dar al-Fiker. (Arabic Issue)

Relph, E. (1976). Place and Placelessness. London: Pion

--------- (1987). The Modern Urban Landscape. Baltimore, Maryland: the Johns Hopkins University Press

Rihawi, AbdualKader (1979). The Arab and Islamic Architecture. Damascus: Ministry of Culture. (Arabic Issue)

Ross, H.L. (1962). "Reasons for Moves to and from a Central City Area", in Social Forces, 40, 261.

Rushton, Gerard (1981). "The Scaling of Locational Preferences", in Behavioral Problems in Geographical revisited. Edited by Kevin, R. Cox and Reginald G. Golledge. New Yark: Methuen.

Saalman, H. (1968). Medieval Cities. New York: Brasiller.

Saarinen, T.F. (1969). Perception of Environment. Commission on College

Geography, Resource Paper No. 5., Association of American Geographers, Washington, D.C.

Al-Sai'ed, Ridwan (ed.). Al-Fiker Al-Arabi: the city's problem and the Arabic city. No. 29 and No. 30. (Arabic Issue)

Saqqaf, Abdullasis Y. (ed.) (1987). The Middle East City. New York: Paragon House Publishers.

Saussure, Ferdinand de. (1959). Course in General Linguistics. Edited by Charles Bally and Albert Sechehaye. Translated from the French by Wade Daskin. New York.

---------- (1966). Course in General Linguistics. London: Duckworth.

Savory, R.M. (ed.) (1976). Introduction to Islamic Civilization. Cambridge: Cambridge University Press.

Scalvini, M.L. (1974). "A Semiotic Approach to Architectural Criticism", in A semiotic Language. Edited by Chatman, S., Eco, U., & Klinkenberg, J. New York, Paris: Mouton Publishers, pp. 965-969.

Seamon, D. & Buttimer Anne (ed.) (1980). The Human Experience of Space and Place. London: Croom Helm.

Seamon, D. (1979). A Geography of the Life Word: Movement, Rest, and Encounter. New York: St. Martin's Press.

S bano, H. Kassan (1982). The History of Events in Syria and Lebanon. Damascus: Dar Kouta.ba. (Arabic Issue)

---------- (1985). The History of Old Damascus. Damascus: Dar Koutaiba. (Arabic Issue)

Sebeok, Thomas A., (ed.) (1977). A Profusion of Signs. Bloomington: Indiana University Press.

Serageldin, I. and El-Sadec, S. (eds.) (1981). The Arab City. Proceedings of a Symposium held in Medina, Kingdom of Saudi Arabia.

S: ..ion, C.E. & Weaver, W. (1967). The Mathematical Theory of Communication. Illinois: The University of Illinois Press.

Singer, D. (1964). "The Impact of Interracial Classroom Exposure on the Social Attitudes of Fifth Grade Childern. Unpublished study. Cited on p.49 by J. Harding, H. Proshansky, B. Kutner, and I. Chein, "Prejudice and Ethnic Relations". In G. Lindzey and E. Aronson (Eds.), The Handbook of Social Psycology. Reading, Mass.: Addison-Wesley, 1969, pp.1-76.

Solomon, Jack (1988). The Signs of Our Time. Los Angeles: Jeremy P. Tarcher, Inc.

Sommer, Robert (1972). Design Awareness. San Francisco: Rinehart Press.

---------- (1974). Tight Space: Hard Architecture and How to Humanize it. Englewood Cliffs, N.J.: Prentice-Hall, Inc., Ch. 9.

Souvget, Jean (1935). Alsham Damascus. Translated from French to Arabic by F.A. Albstani in 1936, edited by Alelabi H.A. in 1989, as first edition. Damascus: Alhmra.

Stea, D. (1969). "The Measurement of Mental Maps", in Behavioural Problems in Geography. Edited by K.R. Cox and R.G. College. A symposium, Northwestern University Studies in Geography No. 17.,pp. 228-253.

The Study of the Official Plan and the Planning Principles, (1970). (Arabic Issue)

Al-Tantaoui, Ali (1959). Damascus. Damascus: Dar al-Fiker.(Arabic Issue)

Tarjaman, Sihem (1078). Yamal al-Sham. 2ed edition. Damascus: Armed Forces Administration. (Arabic Issue)

Taylor, John S. (1986). Commonsense Architecture. London, New York: W.W. Norton and Company.

Thrift, N.J. (1983). "On the Determination of Social Action in Space and Time", in Environment & Planning D: Society and Space, 1, 23-56.

Thubron, Colin (1939). Mirror to Damascus. Boston: Little Brown.

Al-Toumaimi, Hamza (1983). History of Damascus: 1107-1160. Damascus: Dar al-Hassan. (Arabic Issue)

Tuan, Yi Fu (1974). Topophilia: a study of environmental perception, attitudes, and values. Englewood Cliffs, N.J.: Prentice Hall.

---------- (1977). Space and Place. Minneapolis: University of Minnesota Press.

---------- (1978). "Sign and Metaphor", In Annals of the Association of American Geographers. Vol. 68, No. 3, September, pp. 363-372.

Uexkull J. von, (1957). "A stroll through the worlds of animals and men: a picture book of invisible worlds" in Instinctive Behaviour: The Development of a Modern Concept. edited by C H Schiller. New York: International Universities Press.

Venturi, R. (1973). "Ugly is Beautiful", in The Atlantic, Monthly, 1973, pp. 33-43.

Von Gruenebaum, G.E. (1958). "The Muslim Town", in Landscape,voll, no.3.

Wagstaff, J. (1983). "The Origin and Evolution of Towns", in The Changing Middle Eastern City. Edited by G. Blake and R. Lawless. London: Crown Helm, pp. 11-33.

Walmsley, D.J. (1988). Urban Living: the Individual in the City. New York: John Wiley, Longman.

Wittig, Susan (1974). "Architecture about Architecture: Self-Reference as a Type of Architectural Signification", in A Semiotic Language. Chatman, S., Eco, U., & Klinkenberg, J. (eds.). New York, Paris: Mouton Publishers, pp. 970-980.

Whyte, William, H. (1982). "Small Space is Beautiful: Design as if People Mattered", in Technology Review, July, pp. 36-49.

Yancey, William L. (1976). "Architecture, Interaction and Social Control: the case of a large scale housing project, In Environment Psychology: People and their Physical Settings (2nd ed.). Edited by H. M. Proshansky, W.H. Ittelson, & L.G. Rivlin. New York: Holt, Rinehart & Winston.

---------- (1983). "Spaced out: Human Behaviour and the Built Environment", in Remaking the City. Edited by John S. Pipkin, et. al. Albany: The State Univ. of New York Press, pp. 162-179.

Yusuf-Ali, Abdullah (1977). The Holy Quran: Text, Translation, and

Commentary. 2ed Edition. U.S.A.: American Trust Publications.

Zannaras, G. (1973). An Analysis of Cognitive and Objective Characteristics of the City: their Influence on Movements to the City Center. Unpublished Ph.D. Disertation, Deptartment of Geography, Ohio State University.

Zouhdi, Bashir (1982). "Damascus: Its Architectural Construction and Arrangment through The Historical eras", in Old Damascus Symposium. Syrian Engineer Union, Damascus's Division. pp. 205-239.

Zoning By Laws For Damascus (Nezam Al-Benah Al-Khas Bemadinat Dimask) (1983), 2nd edition. Syrian Engineer Union, Damascus's Division.