



<https://theses.gla.ac.uk/>

Theses Digitisation:

<https://www.gla.ac.uk/myglasgow/research/enlighten/theses/digitisation/>

This is a digitised version of the original print thesis.

Copyright and moral rights for this work are retained by the author

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge

This work cannot be reproduced or quoted extensively from without first obtaining permission in writing from the author

The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the author

When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given

Enlighten: Theses

<https://theses.gla.ac.uk/>
research-enlighten@glasgow.ac.uk

**CONTINUITY AND CHANGE IN TRADITIONAL DOMESTIC
ARCHITECTURE OF PALESTINE: TRANSFORMATION OF TRADITIONAL
CONCEPTS OF HOUSE DESIGN IN NABLUS**

By

EMAN MOHAMMAD AL-AMAD
B.Sc. , M. Arch.

A Thesis Submitted to the Mackintosh School of Architecture, University of Glasgow in
Fulfillment of the Requirements for the Degree of Ph.D. in Architecture

February 1998

ProQuest Number: 10992320

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10992320

Published by ProQuest LLC (2018). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

GLASGOW UNIVERSITY
LIBRARY

11078 (copy 1)

GLASGOW
UNIVERSITY
LIBRARY

Dedicated to My Father

Continuity and Change in Traditional Domestic Architecture of Palestine: Transformation of Traditional Concepts of House Design in Nablus

Abstract

This study investigates the transformation of house design within the specific cultural setting of Palestine and examines the extent of the contribution made by users and practising architects to that transformation. The research links this with changes which have occurred in the socio-cultural context of Palestine during the twentieth century and which resulted in changes in users' lifestyle. It questions whether alterations in Palestinian house design are related only to the users' new requirements, attitudes, and aspirations, or to changes precipitated by the architect and not the user, or are related to both the user and the architect.

A proposed research model comprises the three main elements of the study, i.e. the house, the user, and the architect. The research methodology adopted is based on comparisons between three generic house types identified by the study: type A - the traditional courtyard house evolved in Palestine pre-1918; type B - the colonial central-hall house developed during the period of British mandate in Palestine; and type C - the modern house of Palestine which started to appear during the fifties concomitant with the start of the professional architect's practice.

Empirical investigation based on questionnaire survey was carried out through two case studies: of the house user, and of the architect. Both case studies were conducted in Nablus. Several factors were under investigation: house characteristics and condition; user's attitudes and preferences; the architect's background (education, experience, and practice); the architect's attitudes towards new and traditional architecture; and his/ her extent of involvement in the design and construction of private houses in Palestine.

The SPSS PC+ (Statistical Package for Social Science, Windows Base) was used for processing and analysing the main body of the research data. Several nonparametric statistical tests for k samples were conducted: The *Kruskal -Wallis* and the *Median* tests, the *Chi-square* test, and the *Spearman's* and *Kendall's* rank correlation tests.

The thesis concluded that both users and architects have contributed to a certain extent to change in Palestinian house design. However, an emerging pattern of development in design was detected among the three generic house types. Change in house design from type A to type B was largely influenced by users as a result of change in their life style, needs, requirements, preferences, and thus their satisfaction with the traditional house layout and exterior design. Change from house type B to C was mainly the result of the architect's intervention which was evident in the development of the functional and environmental aspects of the house, and was facilitated by architectural and technical knowledge, and the availability of new building materials and construction techniques.

Acknowledgements

The author is fully aware that this work could not have been completed without the assistant and support of a number of people

Sincerest thanks, gratitude and appreciation to Dr. Raid Hanna supervisor and director of Postgraduate Studies. Without his assistance, careful guidance, constructive criticism, and continuous encouragement this work could not have been accomplished.

Deepest thanks to Mr. J. Cosgrove, deputy of the Glasgow School of Art for advice and assistant in administrative issues.

Thanks extend to the British council for support with funding a full year's scholarship and also to the Karim Rida Said foundation and UNESCO (Paris) for partial support during the course of my study.

Special thanks for a number of people in Al-Najah university (Nablus), Dr. Munther Salah, the head of the university, Dr. Rami Al-Hamdallah, deputy of academic affairs, and Dr. Sameer Abu-Aisheih, the former Dean of the Faculty of Engineering, for their encouragement and assistant with the British council scholarship.

Many thanks to the students of Al-Najah university who helped in conducting the questionnaire survey, data collection, and building surveys. Appreciation for the architects in Nablus who participated in the questionnaire survey, and for the occupants of all the houses surveyed. The help and time they offered contributed to the collection of the bulk of the research data.

Special acknowledgements for Dr. Ra'Ed Qaqish for his assistance in computing at the early stages of the work. Thanks to Ms Susan Bailey for her assistance in English editing, also to the people in the School of Art's library especially Mr. David Buri and Mrs. Carol Holmes for their help in supplying books and references.

My deepest thanks and gratitude to every member of my loving family young and old, their love, support and patience were of great help for me in the long, hard times of my study. Words can not express my sincerest thanks to my father Mohammad Al-Amad for his understanding, kind guidance, and limitless support. Also many thanks to my mother Hannan for all she has done and continues to do for me, to my son Abdul-maqsoud for his patience and support despite his young age. My thanks extend to my brother Ahmad, my sister Abeer, my brother in law Tareef, my sister in law Manal and all their children. All of them shared my highs and lows during the course of my study.

Finally thanks to my friends in Glasgow, in particular to Ms Rubina Shaikh, and all others elsewhere for encouragement and moral support.

CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENT	iii
LIST OF FIGURES	ix
LIST OF TABLES	xii
LIST OF PLATES	xv
 TABLE OF CONTENTS	
Introduction	1
1. The Palestinian User in the West- Bank: Historical, and Socio-Cultural Background	
1.1 Introduction	6
1.2 Historical Background	7
1.3 The Palestinians	9
1.4 The Physical Environment of the West- Bank/ Palestine	10
1.5 The Palestinian Society	11
1.5.1 The Traditional Society	11
I. Background	12
II. The traditional Palestinian family	14
1.5.2 Change in the Social Context of Palestine	15
I. The contemporary Palestinian family	18
II. The contemporary Palestinian user	20
III. User's Attitudes	22
IV. User's needs, satisfaction, and preferences	23
1.6 Conclusions	26
1.7 References	27
 2. The Palestinian House: Development of Design and House Typologies in Palestine	
2.1 Introduction	30
2.2 The Courtyard House	30
2.2.1 Definition	30
2.2.2 Relationship of the Traditional Palestinian House with its Context	31
2.2.3 Layout	32
I. The entrance (semi-public section of the house)	34
II. The courtyard in the Arab house	34
III. The men's quarter (semi-private section of the house)	36
IV. The women's quarter (the private section of the house)	37
V. Private gardens	37
2.2.4 Exterior Facade of the House	38
2.2.5 Interior Spaces and Furniture	38
2.2.6 The Traditional Houses as a Climate Modifier	39
2.2.7 Traditional Building Materials and Construction	41
2.2.8 Social Aspects of the Traditional Palestinian House	41
2.3 The Colonial House (Covered Central- Hall)	47
2.3.1 Main Characteristics	47
2.3.2 Layout	49
2.3.3 Exterior Design	51

2.4	The Modern House in Palestine	55
2.4.1	Main Characteristics	55
2.4.2	Layout	55
2.4.3	Exterior Design	56
2.5	Comparative Analysis of the Three House Typologies	59
2.6	Conclusions	62
2.7	References	64
3.	The Palestinian Architect: Profile, Education and Practice	
3.1	Introduction	66
3.2	The Architect's Profile	66
3.2.1	General	66
3.2.2	Male Female Architect	68
3.3	The Architect's Education	69
3.3.1	Architectural Education: An Historical Review	70
3.3.2	Education of the Palestinian Architect	73
	I. Schools of architecture in Palestine	75
3.3.3	The Education of an Architect and its Impact on Transformation of the Traditional Built Environment	78
3.4	Design: Origin and Background	80
3.4.1	The Design Process	81
	I. The architect	85
	II. The client (user)	87
3.5	Conclusions	88
3.6	References	90
4.	The Research Methodology Design and Case Studies	
4.1	Introduction	92
4.2	Relevant Work	92
4.3	The Statement of the Problem	93
4.3.1	The Research Problem	94
4.3.2	The Research Sub- Problems	94
	I. The first sub- problem (design typology)	95
	II. The second sub- problem (user based evaluation)	96
	III. The third sub- problem (architect- based evaluation)	96
4.4	The Hypothesis	97
4.5	The Importance of the Study	98
4.6	The Research Program	99
4.7	The Research Methodology	100
4.7.1	The Research Model	100
4.7.2	The Survey Model	101
4.7.3	The Selection of Samples	102
	I. The sample users	102
	II. The sample architects	103
4.8	The Research Case Studies	103
4.8.1.	The First Case Study: The House User Case Study	104
4.8.2.	The Second Case Study: The Architect Case Study	105

4.9	The Research Data	106
4.9.1	Type of Research Data	106
	I. The primary data	106
	II. The secondary data	107
4.9.2	Methods of Data Collection	107
4.9.3	Methods of Scaling	107
4.9.4	The Research Variables	107
4.9.5	The Questionnaire	111
	I. The questionnaire design	112
	II. The questionnaire structure	113
4.10	Physical Measurements	117
4.11	Statistical Analysis	117
4.12	Organisation of the Findings	118
4.13	Conclusions	119
4.14	References	120
5.	House Profile (Descriptive Statistics)	
	The Analysis of <u>Part One</u> of the House User Questionnaire	
5.1	Introduction	121
5.2	The Results of the House User Questionnaire: Descriptive Statistics	121
5.2.1	<u>Part One (A) : General Information</u>	122
	I. Year of construction	122
	II. House location	124
	III. House ownership	125
	IV. House characteristics	128
	V. Family size	148
5.2.2	<u>Part One (B): Physical Condition</u>	152
	I. Construction materials	152
	II. The physical condition of the house	154
5.3	Conclusions	156
5.4	References	159
6.	Bivariate Analysis of User Attitudes Towards the House Image and Layout: (Exploring Relationships)	
	The Analysis of <u>Part Two</u> of the House User Questionnaire	
6.1	Introduction	160
6.2	Over View of Statistical Techniques Used	161
6.2.1	The One Way Analysis of Variance ANOVA	162
6.2.2	Nonparametric Tests for k Independent Sample; The Kruskal- Wallis H Test (K-W test) and the Median Test.	162
6.2.3	Correlation Tests: The Spearman and Kendall Rank Correlation Tests	163
6.3	<u>Part Two</u> of the House User Questionnaire: The User Attitude Towards House Image and Layout	164
6.3.1	<u>Part Two (A) of the House User Questionnaire: The Image of the House</u>	165
	I. The external image of the house	167
	II. The internal image of the house	169
	III. The distinctiveness of the house	173
	IV. The house as an identity expression	175

	V.	Bivariate correlation between Variables of Part Two (A) of the house user questionnaire: The image of the house	178
	VI.	Summary of the findings of Part Two (A): The image of the house	180
6.3.2		<u>PART TWO (B)</u> of the House User Questionnaire: The Layout of the House	183
	I.	Circulation space	185
	II.	Spaciousness of rooms	188
	III.	Room arrangement	191
	IV.	Provision of reception room	193
	V.	Importance of the reception room	195
	VI.	Bivariate tests of variables of Part Two (B) of the house user questionnaire: The house layout	197
	VII.	Summary of the findings of Part Two (B): The layout of the house	199
6.4		Conclusions	200
6.5		References	204
7.		Bivariate analysis of House Condition (Environmental, Social and Psychological, and Functional): Exploring Relationships	
		Analysis of <u>Part Three</u> of the House User Questionnaire	
7.1		Introduction	206
7.2		Part Three of the House User Questionnaire	207
	7.2.1	<u>Part Three (A)</u> : Environmental Conditions	208
		I. Quality of internal day lighting conditions	210
		II. Lack of sun inside	213
		III. Discomfort caused by high humidity levels	215
		IV. Thermal condition in Summer	217
		V. Poor natural ventilation	219
	7.2.2	<u>Part Three (B)</u> : Social and Psychological Aspects	221
		I. Lack of interesting views	222
		II. Lack of privacy	224
	7.2.3	<u>Part Three (C)</u> : Functional Aspects	227
		I. Small house size in relation to family size	229
		II. Mismatched bathroom location	231
		III. Small kitchen size	233
		IV. The frequent need for maintenance	235
7.3		Correlation Between Variables of Part Three of the House User Questionnaire	237
	7.3.1	Type A Houses	238
	7.3.2	Type B Houses	242
	7.3.3	Type C Houses	244
7.4		Conclusions	249
7.5		References	252

8.	The Architect and the Design Process of Private Houses	
8.1	Introduction	253
8.2	Section One: The Architect	254
8.2.1	<u>Part One</u> of the Architect Questionnaire: General Information	255
	I. The architect's education	255
	II. The architect's practice	258
	III. The architect's experience in house design	259
8.2.2	<u>Part Two</u> of the Architect Questionnaire : Traditional Palestinian Architecture	260
	I. Interrelationships between variables of part two of the architect questionnaire	264
8.2.3	<u>Part Three</u> of the Architect Questionnaire: Houses of Nablus (type A and B)	266
	I. Attitudes towards houses of type A and B in Nablus	267
	II. Conservation of old houses of Nablus	268
	III. Interrelationships between variables	269
8.2.4	<u>Part Five</u> of the Architect Questionnaire: The Architect's General Attitude	269
8.3	Section two : The Design Process of Private Houses	
8.3.1	<u>Part Four</u> of the Architect questionnaire (The Design of Private Houses.	271
	I. Extent of client's influence on the architect's design decision	272
	II. Important functions in private houses according to architects and clients (type C only).	272
	III. Aspects of concern for clients in house design	275
	IV. The new building materials	282
8.3.2	<u>Part Six</u> of the House User Questionnaire: The client as a participatory element in the design process of private houses (Type C only)	283
	I. Design stage of private houses	285
	II. Construction stage of private houses	288
	II. Occupancy stage of private houses	292
	V. Correlation between variables and user overall satisfaction	293
8.4	Conclusions	294
8.5	References	299

9.	User Preference for Old and New Architecture	
	The Analysis of <u>Part Four</u> of the House User Questionnaire	
9.1	Introduction	301
9.2	Part Four of the House Use Questionnaire: User Preference For Old or New Houses	302
9.2.1	<u>Part Four (A)</u> : Users Preference Relative to Old Houses	303
	I. Conserved old houses	303
	II. Maintenance of old houses	304
	III. Space arrangements of old houses	304
	IV. General preference for old houses	305
	VI. Discussion	308
9.2.2	<u>Part Four (B)</u> : Users Preference Relative to New Houses	308
	I. Media influence on users' preference	310
	II. New houses and their association with modernity and progress	312
	III. New houses as a sign of users' high social status	314
	V. Discussion	315
9.3	Correlation Between Variables of Part Four of the House User Questionnaire	316
9.4	Users Previous Residency:	319
9.5	Conclusions	321
9.6	References	323
10.	Conclusions, Recommendations, and Areas of Further Research	
10.1	Introduction	324
10.2	An Over View of the Investigation	324
10.2.1	Theoretical Background	325
10.2.2	The Research Problem and Sub- Problems	327
10.2.3	Testing the Hypothesis	328
10.2.4	The Findings	330
	I. The house	330
	II. The user	332
	III. The Architect	335
10.3	Interpretation of the Findings	337
10.3.1	Transformation of the Palestinian House Design	337
	I. The house layout	337
	II. The house exterior design	339
10.3.2	The Extent of the Users' Contribution to Transformation	340
10.3.3	The Extent of the Architects' Contribution to Transformation	342
10.4	Conclusions	343
10.5	Areas of Further Research	346
10.6	Recommendations	347
10.7	Closing Remarks	348
	APPENDIX 1	349
	APPENDIX 2	353
	APPENDIX 3A	356
	APPENDIX 3B	361
	APPENDIX 3C	367
	BIBLIOGRAPHY	372

LIST OF FIGURES

Figure 1.1	Map of Palestine	7
Figure 1.2	Map of Palestine after 1948 showing the West-Bank and Gaza strip.	8
Figure 1.3	Diagram indicating the relationship between user's needs and requirements, appropriate design and user's satisfaction.	24
Figure 2.1	A diagrammatic representation of the layout of the traditional Palestinian house	33
Figure 2.2	Section through courtyards on two different levels	35
Figure 2.3	Example of the courtyard house in Palestine. Al-Nimir family house inside the old city of Nablus.	44
Figure 2.4	Diagrams showing different configurations of central hall houses in Nablus (Palestine).	50
Figure 2.5	Example of the colonial central-hall house in Palestine. A house in Nablus	52
Figure 2.6	Example of the modern house in Nablus/Palestine	57
Figure 3.1	Pie chart representing the distribution of Palestinian architects amongst cities	67
Figure 3.2	Pie chart showing the distribution of Nablus architects by year of graduation according to the Engineering association/ Jerusalem centre, December 1996.	68
Figure 3.3	Skew distribution for Nablus architects by the year of graduation according to the Engineering association/ Jerusalem centre, December 1996.	68
Figure 3.4	Stack bar diagram indicating the gender distribution of Nablus architects by the year of graduation	69
Figure 3.5	Pie chart represents the ratio of male to female architects of Nablus in December 1996	69
Figure 3.6	Stacked bar diagram showing the distribution of Nablus architects' place of graduation by the year of graduation according to the Engineering association, Jerusalem centre/ December 1996.	73
Figure 3.7	Pie chart showing the distribution of Nablus architects by the university of graduation in December 1996.	74
Figure 3.8	Pie chart showing the distribution of Arabic universities' graduates in Nablus in December/ 1996.	74
Figure 3.9	Boxplot showing the spread of Nablus architects' year of graduation by sex.	74
Figure 3.10	Distribution of Nablus architects place of graduation by sex.	75
Figure 3.11	Structure of the curriculum of architecture at Al-Najh university/ Nablus, Palestine.	76
Figure 3.12	A comparison between subjects taught at the schools of architecture of both the Edinburgh Collage of Art, Heriot-Watt university and Al-Najah university, Nablus	77
Figure 3.13	The RIBA plan of work map of the design process (1965)	82
Figure 3.14	A Simple diagram for the design process. It indicates that the map should allow for return loop to all preceding functions.	83
Figure 3.15	Different sources that provide the architect with information needed for producing a design brief.	86
Figure 4.1	The thesis problem and sub-problems.	95
Figure 4.2	The research model	101
Figure 4.3	A diagram showing the research variables and their relationships	108
Figure 5.1	A bar diagram showing the distribution of sample houses by the year of construction	124
Figure 5.2	Bar diagram of the distribution of owned and rented houses by the house type	126
Figure 5.3	The percentage of owned (shaded squares) to rented houses (white squares) by the house type to the nearest 5%.	126
Figure 5.4	Bar graph for mean of total floor area of owned and rented houses by the house type.	127
Figure 5.5	The relationship between the number of houses and the number of stories by the house type.	129
Figure 5.6	A stacked bar diagram showing the distribution of the total floor area in m ² by the house type.	130
Figure 5.7	A stacked bar diagram showing the distribution of number of rooms by the house type	132

Figure 5.8	Percentage of sample houses with reception rooms (shaded squares) to those without (white squares) by house type to the nearest 5%.	135
Figure 5.9	Percentage of sample houses with living rooms (shaded squares) to those without (white squares) by house type to the nearest 5%.	137
Figure 5.10	Percentage of sample houses with dining rooms (shaded squares) to those without (white squares) by house type to the nearest 5%.	138
Figure 5.11	Percentage of sample houses with bedrooms (shaded squares) to those without (white squares) by house type to the nearest 5%.	139
Figure 5.12	Percentage of sample houses with bathrooms (shaded squares) to those without (white squares) by house type to the nearest 5%.	141
Figure 5.13	Percentage of sample houses with kitchens (shaded squares) to those without (white squares) by house type to the nearest 5%.	142
Figure 5.14	Percentage of sample houses with gardens (shaded squares) to those without (white squares) by house type to the nearest 5%.	143
Figure 5.15	Percentage of sample houses with verandas (shaded squares) to those without (white squares) by house type to the nearest 5%.	145
Figure 5.16	A stacked bar diagram showing the distribution of architectural elements by house type	145
Figure 5.17	A stacked bar diagram showing the distribution of family size by house type.	148
Figure 5.18	The relationship between the total floor area of the house in m ² and the family size by the house type.	149
Figure 5.19	The relationship between the number of rooms and family size by house type	150
Figure 5.20	A stacked bar diagram showing the distribution of window frame material by the house type	153
Figure 5.21	A stacked bar diagram of the Interior condition of sample houses by the house type.	155
Figure 5.22	A stacked bar diagram of the exterior condition of sample houses by the house type.	155
Figure 6.1	The structure of chapter six showing the sub-sections of part 2 and different variables.	160
Figure 6.2	The variation within groups of user attitude towards the external image of the house.	168
Figure 6.3	The variation between groups of user attitude towards the external image of the house.	168
Figure 6.4	Boxplot of score distribution within groups for user attitude towards the external image of his/her house.	168
Figure 6.5	The variation within groups of user attitude towards the internal image of the house	171
Figure 6.6	The variation between groups of user attitude towards the internal image of the house	171
Figure 6.7	Boxplot of score distribution within groups for users attitudes towards the internal image of their houses	171
Figure 6.8	The variation within groups of user attitudes towards the distinctiveness of the house	174
Figure 6.9	The variation between groups of user attitude towards the distinctiveness of the house	174
Figure 6.10	Boxplot of score distribution within groups for users attitudes towards the distinctiveness of their houses	175
Figure 6.11	The variation within groups of user attitude towards the house as an expression of identity	176
Figure 6.12	The variation between groups of user attitude towards the house as an expression of identity	176
Figure 6.13	Boxplot of score distribution within groups for users attitudes towards the house as an identity expression	177
Figure 6.14	The percentage of overall satisfaction according to house type	182
Figure 6.15	Boxplot of score distribution of users' overall satisfaction	182
Figure 6.16	Diagrams shoeing the circulation space within the layout of the three house typologies	186
Figure 6.17	The variation within groups of user attitudes towards the circulation of the house	186
Figure 6.18	The variation between groups of user attitude towards the circulation of the house.	186

Figure 6.19	Boxplot of scores distribution within groups for users attitudes towards the circulation of their houses	187
Figure 6.20	The variation within groups of user attitudes towards the spaciousness of the house	189
Figure 6.21	The variation between groups of user attitude towards the spaciousness of the house	189
Figure 6.22	Boxplot of scores distribution within groups for users attitudes towards the spaciousness of their houses	190
Figure 6.23	The variation within groups of user attitudes towards the arrangement of rooms of the house.	191
Figure 6.24	The variation between groups of user attitude towards the arrangement of rooms of the house	191
Figure 6.25	Boxplot of scores distribution within groups for users attitudes towards the arrangement of rooms in their houses	192
Figure 6.26	The variation within groups of user attitudes towards the provision of a reception room in their houses	194
Figure 6.27	The variation between groups of user attitude towards the provision of a reception room in their houses	194
Figure 6.28	Boxplot of scores distribution within groups for users' attitudes towards the provision of a reception room in their houses	194
Figure 6.29	The variation within groups of user attitudes towards the importance of the reception room	196
Figure 6.30	the variation between groups of user attitude towards the importance of the reception room	196
Figure 6.31	Boxplot of scores distribution within groups for users attitudes towards the importance of the reception room in their houses	196
Figure 7.1	Diagram of the structure of chapter seven showing its three parts and different variables.	207
Figure 7.2	Percentage of observations' distribution for the DV quality of internal daylight	211
Figure 7.3	Means of group observations for the DV quality of internal daylight	211
Figure 7.4	Boxplot of score distribution within groups for the DV quality of internal daylight	212
Figure 7.5	Percentage of observations' distribution for the DV lack of sunshine inside	214
Figure 7.6	Means of group observations for the DV lack of sunshine inside	214
Figure 7.7	Boxplot of score distribution within groups for the DV lack of sun reception	215
Figure 7.8	Percentage of observations' distribution for the DV high humidity levels	216
Figure 7.9	Means of group observations for the DV high humidity levels	216
Figure 7.10	Boxplot of score distribution within groups for the DV high humidity levels	216
Figure 7.11	Percentage of observations' distribution for the DV thermal condition in summer	218
Figure 7.12	Means of group observations for the DV thermal condition in summer	218
Figure 7.13	Boxplot of score distribution within groups for the DV thermal condition in summer	218
Figure 7.14	Percentage of observations' distribution for the DV poor natural ventilation	220
Figure 7.15	Means of group observations for the DV poor natural ventilation	220
Figure 7.16	Boxplot of score distribution within groups for the DV poor natural ventilation	220
Figure 7.17	Percentage of observations' distribution for the DV lack of interesting views	223
Figure 7.18	Means of group observations for the DV lack of interesting views	223
Figure 7.19	Boxplot of score distribution within groups for the DV lack of views	224
Figure 7.20	Percentage of observations' distribution for the DV lack of privacy	225
Figure 7.21	Means of group observations for the DV lack of privacy	225
Figure 7.22	Boxplot of score distribution within groups for the DV lack of privacy	226
Figure 7.23	Percentage of observations' distribution for the DV small house size in relation to family size	229
Figure 7.24	Means of group observations for the DV small house size in relation to family size	229
Figure 7.25	Boxplot of score distribution within groups for the DV small house size	230
Figure 7.26	Percentage of observations' distribution for the DV mismatched bathroom location	232
Figure 7.27	Means of group observations for the DV mismatched bathroom location	232
Figure 7.28	Boxplot of score distribution within groups for the DV mismatched bathroom location	232
Figure 7.29	Percentage of observations' distribution for the DV small kitchen size	234
Figure 7.30	Means of group observations for the DV small kitchen size	234

Figure 7.31	Boxplot of score distribution within groups for the DV small kitchen size	235
Figure 7.32	Percentage of observations' distribution regarding the DV frequent maintenance	236
Figure 7.33	Means of group observations regarding the DV frequent maintenance	236
Figure 7.34	Boxplot of score distribution within groups for the DV the need for endless maintenance	237
Figure 8.1	The structure of chapter eight showing the two sections and their components	253
Figure 8.2	Skew distribution of sample architects by year of graduation	257
Figure 8.3	Skew distribution of Nablus architects by the graduation year	257
Figure 8.4	Distribution of the sample offices by the year of establishment	259
Figure 8.5	Skew distribution of the number of architects per office among sample offices	259
Figure 8.6	Boxplot for the sample architects years of experience by gender	260
Figure 8.7	Bar chart showing the number of architects by the design concept of own house	270
Figure 8.8	Observation distribution; no. of architects and clients by the most important space in house layout.	273
Figure 9.1	Structure of chapter nine showing he two parts 4A, 4B and the variables	302
Figure 9.2	Observations distribution within groups by the DV preference for old houses	307
Figure 9.3	Means of group observations by the DV preference for old houses	307
Figure 9.4	Boxplot of score distribution within groups for the DV preference of old houses	307
Figure 9.5	Observations distribution within groups by the DV media influence on users' preference	311
Figure 9.6	Means of groups observation by the DV media influence	311
Figure 9.7	Boxplot of score distribution within groups for the DV media influence on users' preference	311
Figure 9.8	Observations distribution within groups by the DV modernity and its association with new houses	312
Figure 9.9	Means of groups observations by the DV modernity and its association with new houses	312
Figure 9.10	Boxplot of scores distribution within groups for the DV modernity	313
Figure 9.11	Observations distribution within groups by the DV high social status association with new houses	314
Figure 9.12	Means of groups observations by the DV high social status association with new houses	314
Figure 9.13	Boxplot of scores distribution within groups for the DV social status	315
Figure 10.1	Graphical representation of the findings related to the Palestinian house, based on the percentage of users' observations obtained from the house user questionnaire	332
Figure 10.2	Graphical representation of the findings related to the Palestinian user, based on the percentage of observations obtained from the house user questionnaire	335
Figure 10.3	A graphical representation of the stages of change occurring in Palestinian house design.	343

LIST OF TABLES

Table 2.1	Comparison between the urban context of the three types of houses	59
Table 2.2	Comparisons between the interior space of the three house types	59
Table 2.3	Comparison between the layout of the three house types developed in Palestine	60
Table 2.4	Comparison between street facade(s) of the three house types	61
Table 3.1	Distribution of different engineering specialities registered with the engineering association, West-Bank/ Jerusalem branch in January 1996.	67
Table 4.1	Variables that relate to the house in the house user case study	109
Table 4.2	Variables that concern the user within the house user case study.	110
Table 4.3	Variables that relate to the architect within the house user case study.	110
Table 4.4	Variables that relate to the architect within the architect's case study	111
Table 5.1	Number and percentage of sample houses by the year of construction.	123

Table 5.2	Number of owned and rented houses according to house type	126
Table 5.3	The relationship between ownership and maintenance by the house type	127
Table 5.4	Count and percentage of houses by the number of stories.	129
Table 5.5	Descriptive statistics for house total floor area by the house type.	130
Table 5.6	Number and percentage of houses by the total floor area	131
Table 5.7	Descriptive statistics for no. of rooms by the house type.	133
Table 5.8	Count and percentage for the distribution of number of rooms by the house type	133
Table 5.9	Descriptive statistics for reception rooms in relation to house type.	134
Table 5.10	Count and percentage of the reception rooms by house type.	134
Table 5.11	Descriptive statistics for living rooms in relation to house type	136
Table 5.12	Count and percentage of the living rooms by house type	136
Table 5.13	Descriptive statistics for dinning rooms in relation to house type.	137
Table 5.14	Count and percentage of the dinning rooms by house type	137
Table 5.15	Descriptive statistics for bedrooms in relation to house type.	138
Table 5.16	Count and percentage of the bedrooms by house type	138
Table 5.17	Descriptive statistics for bathrooms in relation to house type.	140
Table 5.18	Count and percentage of the bathrooms by house type	140
Table 5.19	Descriptive statistics for kitchens in relation to house type.	141
Table 5.20	Count and percentage of kitchens by house type	141
Table 5.21	Descriptive statistics for gardens in relation to house type.	143
Table 5.22	Count and percentage of the gardens by house type	143
Table 5.23	Descriptive statistics for verandas in relation to house type.	144
Table 5.24	Count and percentage of verandas by house type.	144
Table 5.25	Count and percentage of different architectural elements found in house layouts of the three types of houses	146
Table 5.26	Descriptive statistics for family size by house type	148
Table 5.27	Percentage of family size and the no. of stories of the three house types	151
Table 5.28	Distribution of building materials according to house type.	153
Table 5.29	The distribution and percentage of window frame materials according to house type.	154
Table 5.30	Distribution of sample houses by exterior and interior condition	156
Table 6.1	Results of the Kruskal Wallis test of the four DVs of part 2A of the house user questionnaire in relation to IV (the house type)	165
Table 6.2	Results of the Median test of the four DVs of part 2A of the house user questionnaire in the relation to IV (the house type).	165
Table 6.3	Descriptive statistics for the DV the external image of the house	167
Table 6.4	Descriptive statistics for the DV The internal image of the house	170
Table 6.5	Descriptive statistics for the DV the distinctiveness of the house	174
Table 6.6	Descriptive statistics for the DV Identity	176
Table 6.7	Chi- square crosstabulation results between associated variables of part 2A of the house user questionnaire	178
Table 6.8	Results of Spearman's and Kendall's tests for Correlation between different variables of part 2A of the house user questionnaire	179
Table 6.9	Results of K-W test of the DV user overall satisfaction next to IV the house type	181
Table 6.10	The results of Kruskal Wallis test of the five DVs of part 2B of the house use questionnaire in relation to IV (the house type)	183
Table 6.11	The results of the Median test of the five DVs of part 2B of the house user questionnaire in relation to IV (the house type)	184
Table 6.12	Descriptive statistics for the DV circulation of the house	186
Table 6.13	Descriptive statistics for the DV spaciousness of the house	189
Table 6.14	Descriptive statistics for the DV Arrangement of rooms of the house	191
Table 6.15	Descriptive statistics for the DV importance of reception room	195
Table 6.16	Chi- square crosstabulation results between associated variables of part 2B of the house user questionnaire	197
Table 6.17	Results of Spearman's and Kendall's tests for Correlation between different variables of part 2B of the house user questionnaire	198
Table 7.1	The result of the Kruskal Wallis test of the five DVs of part 3A of the house user questionnaire in relation to IV (the house type)	209

Table 7.2	The results of the Median test of the five DVs of part 3A of the house user questionnaire in relation to IV (the house type)	210
Table 7.3	Chi- square test of the DV lack of sun reception by the IV house type	213
Table 7.4	Chi- square test for the DV high humidity levels by the IV house type	215
Table 7.5	Chi- square test of the DV thermal condition in summer by the IV house type	217
Table 7.6	Chi- square test of the DV poor natural ventilation by the IV house type	220
Table 7.7	The results of the Kruskal- Wallis test of the two DVs of part 3B of the house user questionnaire in relation to IV (the house type)	221
Table 7.8	The results of the Median test of the two DVs of part 3B of the house user questionnaire in relation to IV (the house type)	222
Table 7.9	Chi- square test of the DV lack of interesting views by the IV house type	223
Table 7.10	Chi- square test of the DV lack of privacy by the IV house type	225
Table 7.11	Results of the Kruskal- Wallis test of the four variables of part 3C of the house user questionnaire next to IV (The house type)	228
Table 7.12	The results of the Median test of the four DVs of part 3C of the house user questionnaire in relation to IV (the house type)	228
Table 7.13	Chi- square test of the Dv small house size by the IV house type	229
Table 7.14	Chi- square test of the DV mismatched bathroom location by the IV house type	231
Table 7.15	Chi- square test of DV small kitchen size by the IV house type	234
Table 7.16	Chi- square test of the DV frequent need of maintenance by the IV house type	236
Table 7.17	Chi- square crosstabulation for associated variables of part three of the house user questionnaire (type A houses)	238
Table 7.18	Spearman and Kendall tests for Correlation between associated variables of part three of the house user questionnaire (type A)	239
Table 7.19	Chi- square crosstabulation for associated variables of part three of the house user questionnaire (type B houses)	242
Table 7.20	Spearman and Kendall tests for Correlation between associated variables of part three of the house user questionnaire (type B)	243
Table 7.21	Chi- square crosstabulation for associated variables of part three of the house user questionnaire (type C houses)	245
Table 7.22	Spearman and Kendall tests for Correlation between associated variables of part three of the house user questionnaire (type C)	246
Table 7.23	Chi- square test result on user overall satisfaction by the house type	248
Table 7.24	Spearman and Kendall tests for correlation between users' overall satisfaction and house type	249
Table 8.1	Distribution of sample and Nablus architects by gender in 1996	254
Table 8.2	distribution of sample and Nablus architects by the year of graduation	256
Table 8.3	Distribution of the sample and Nablus architects by place of graduation	258
Table 8.4	Distribution of the sample architects by the type of practice they operate relative to houses	260
Table 8.5	Results of the Chi- square test on the six variables of part two of the architect questionnaire	261
Table 8.6	Results of section two of the Architect Questionnaire	262
Table 8.7	Spearman test for Correlation between variables of part two of the architect questionnaire	265
Table 8.8	Results of the Chi- square test on variables of part three of the architect questionnaire	267
Table 8.9	Results of question 15 of part three of the Architect Questionnaire	268
Table 8.10	Spearman test for Correlation between two variables of the architect questionnaire	269
Table 8.11	Distribution of observations by design concept of architect's own house	270
Table 8.12	Results of the Chi-square test on the design concept of architect's own house	270
Table 8.13	Chi- square test on variables of the extent of client effect on the architect's design decision	272
Table 8.14	Classification according to importance of functions within house layout determined by architects and clients	274
Table 8.15	Chi- square test results on variables of house layout (part four of the architect questionnaire)	276
Table 8.16	Results of question 20 (part 4) of the Architect Questionnaire	277

Table 8.17	Results of the Chi-square test on variables of the external appearance of the house	280
Table 8.18	Observations distribution of variables of the exterior appearance of the house	280
Table 8.19	The <i>Chi</i> -square test on variables of the new building materials (part four of the architect questionnaire)	282
Table 8.20	Results of the <i>Chi</i> -square test on variables of part six of the house user questionnaire (the client as a participatory element in the design process of private houses)	284
Table 8.21	Results of Spearman correlation test on some variables of part six of the house user questionnaire (the client as a participatory element in the design process of private houses)	291
Table 8.22	Significant correlation result of the Spearman's test between variables of part six of the house user questionnaire and the IV user overall satisfaction	293
Table 9.1	Observation distribution of DV1 of part 4(A) of the house user questionnaire among type A group	304
Table 9.2	Observation distribution of DV2 of part 4(A) of the house user questionnaire among type A group	304
Table 9.3	Observation distribution of DV3 of part 4(A) of the house user questionnaire among type A group	305
Table 9.4	The result of the Kruskal Wallis test of DV4 of part 4(A) of the house user questionnaire in relation to IV (the house type)	306
Table 9.5	The results of the Median test of the DV4 of part 4(A) of the house user questionnaire in relation to IV (the house type)	306
Table 9.6	Result of the Kruskal Wallis test of the three DVs of part 4(B) of the house user questionnaire in relation to IV (the house type)	309
Table 9.7	The results of the Median test of the three DVs of part 4(B) of the house user questionnaire in relation to IV (the house type)	310
Table 9.8	Spearman's rho correlation test on different variables of chapter nine by house type	316
Table 9.9	Sample users previous residency by the house type	320
Table 9.10	Reasons for change of residence among sample users by house type	321

LIST OF PLATES

Plate 2.1	The entrance door opens into a courtyard with adjacent stables.	46
Plate 2.2	The entrance to the al-Nimir family house, a transition element from public to private space.	46
Plate 2.3	The "Iwan" in the Al-Nimir family house.	46
Plate 2.4	Courtyard with fountain, potted plants, and outside living space.	46
Plate 2.5	Digital image of an aerial photo of a section of Nablus in 1944. It shows part of the compact old city and a section of dispersed new housing outside the old city (scanned from a photograph using a laser scanner)	48
Plate 2.6	Entrance door in a colonial house	54
Plate 2.7	Entrance door in a colonial house	54
Plate 2.8	Decorative motifs	54
Plate 2.9	Three arch motifs of front elevation	54
Plate 2.10	Decoration of the entrance	54
Plate 2.11	Three arch motifs of front elevation	54
Plate 2.12 -	Digital images of various modern houses in Nablus (scanned from photographs	58
Plate 2.19	using a laser scanner)	

Introduction

INTRODUCTION

During the past century Palestine has undergone a rapid socio-cultural change as a result of several related factors namely, political, economic, and social. The impact of change was manifested in an abandonment of traditional concepts of domestic architecture and an adoption of new ones. This has resulted in change in Palestinian residential architecture and consequently in the transformation of the built environment of Palestine.

The traditional domestic architecture of Palestine represented by the courtyard layout house typology was developed over time by trial and error to a state of satisfaction to users. The clustered courtyard houses composed the residential quarters of the traditional cities, and formed the bulk of their urban fabrics. The introverted traditional courtyard house was the primary adopted type for house design in Palestine until the beginning of the 20th century when it was abandoned for the extroverted villa house type.

The change in traditional house design was abrupt and resulted in a discontinuity of traditional Palestinian architecture. Furthermore, the adoption of the extroverted house type changed the urban growth of Palestinian cities from dense and compact to a dispersed low density urban fabric.

Review of related literature has revealed that several reasons were behind transformation of the built environment and the abandonment of traditional concepts of house design in Islamic, Arabic, or Middle Eastern countries. **However within the specific cultural setting of Palestine this study proposes to examine the transformation of house design, and to investigate the extent of contribution of both users and practising architects to that change.**

For the purpose of investigation three main generic house types were identified and were classified according to their date of construction:

1. **House type A** represents the traditional house in Palestine (the courtyard house) which evolved pre- 1918.
2. **House type B** denotes the colonial house (the covered central- hall house) which developed during the period of the British mandate in Palestine 1918-1948.
3. **House type C** represents the modern house which started to appear concomitant with the beginning of the practice of professional architects in Palestine during the fifties and continued until the time of the study (1996).

The research model adopted by the study comprised the three main elements of the study, the house, the user, and the architect. Investigation was based on comparison between the three house types identified earlier, and was carried out by questionnaire surveys conducted by two case studies, which examined Nablus houses. The research two case studies are:

- 1- The house user case study
- 2- The architect case study

THE STUDY'S OBJECTIVES

The main objectives of the study are to detect transformation of house design in Palestine and to investigate the role users and practising architects could have played in provoking the change. It is anticipated that this study could identify some of the aspects that changed and others that continued to be considered in Palestinian house design.

Assessment of the Palestinian house during different periods of history could indicate the future development of house or public housing architecture in Palestine. Investigating the architect's role in inducing change could contribute to development of architectural education in local Palestinian universities, while investigating the role of users could be of value in understanding some aspects of building- user, as well as architect- user relationships.

THE THESIS STRUCTURE

This thesis comprises two main parts; firstly, the research theoretical background which reviewed related literature in the three first chapters of the study, and secondly, the research empirical work covered by five chapters, from chapters five to chapter nine inclusive. These two parts are linked by chapter four which describes the research methodology adopted by the study to investigate the research problem.

The research theoretical background

Chapter one presents a review of the historical and socio- cultural backgrounds of the Palestinian user in the context of the West- Bank/ Palestine. It discusses the history, the people and the physical environment of the West- Bank. Furthermore chapter one focuses on the change that occurred on the traditional society of Palestine during the twentieth century and relates that to alterations in user's attitudes, requirements, preferences, and satisfaction. The main objective is to review related literature that could shed light on the role the Palestinian user could have played to provoke change in house design in Palestine.

Chapter two studies the development of the Palestinian house during the proposed phases identified by the study which resulted in the evolution of three house typologies, namely, the traditional Palestinian house (the courtyard house) developed until the beginning of the twentieth century, the colonial house in Palestine (the central- hall house) evolved during the period of the British mandate (1918-1948), and the modern house in Palestine which appeared as a result of the professional architects' practice.

The analysis of each house typology involves house layout, main characteristics, and exterior design, and is supplemented by an actual example.

Chapter three portrays the Palestinian architect. It presents general information about local Palestinian architects in the West- Bank, their education and practice. The architect's education is investigated by a brief review of the development of architectural education and an analysis of the local model of education compared to the Western model. The architect's practice is discussed by a review of the design process.

The architect and the client (user) are identified as the two main parties involved in the design of private houses.

The research methodology design

Chapter four links the theoretical part of the study with its practical analysis. It defines the study's main problem, sets out the sub-problems, formulates the research hypothesis and propositions, and presents the research model. The chapter describes the development of the methodology employed and the field work undertaken and explains the research case studies.

The research analysis and findings

The research data analysis, findings and results are presented and discussed in chapters five to nine inclusive.

Chapter five gives a detailed analysis of the house profile. It presents the data related to general information and physical condition of the house investigated by the house user case study. Descriptive statistics are adopted to analyse the data with the use of the Statistical Package of Social Science, SPSS PC⁺. Comparisons between the three house typologies identified earlier are carried out through the chapter.

Chapter six reports on the users' attitudes towards the image and the layout of their houses. Two nonparametric tests are conducted to test variability within the three sample groups, i.e. the Kruskal -Wallis and the Median tests. Results of correlations and comparisons were interpreted to explore issues related to the extent of users' as well as architects' contribution to change in house design in Palestine.

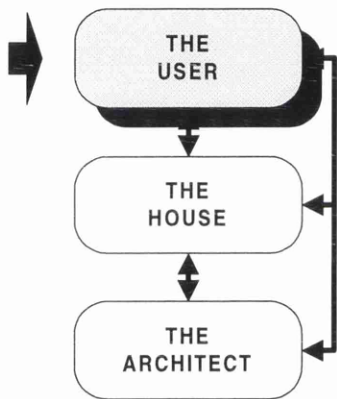
Chapter seven accounts for data analysis of the house. It investigates the house's environmental and functional conditions, as well as some social and psychological requirements of the house. The same techniques carried out in chapter six are conducted in this chapter for investigation and the results are used to arrive at conclusions related to the role both the architect and the user could have played to provoke change in house design.

Chapter eight, with its two sections, provides an insight into the design process of private houses. It presents a detailed analysis of the data yielded by the questionnaire survey carried out by the architect case study. It also discusses the design of private houses which was examined by the house user case study.

The first section of chapter eight aims at examining issues related to the extent of contribution of the Palestinian practising architects to change in house design. It investigates the Palestinian architect, his/ her background, and attitudes towards traditional and new architecture, while the second section involves the design process of private houses. It detects firstly, the extent of involvement of practising architects in Palestine with the design process of private houses and secondly, the extent of users' participation in the design and construction of private houses.

Chapter nine presents a detailed analysis of users' preference for old or new houses. It introduces issues related to preference for living in old or new houses, and it explores reasons behind users preference, and their preference in general. Furthermore the user's past residential experience is investigated and is associated with his/ her preference. The main objective is to reveal more information to facilitate investigation of the extent of contribution of the Palestinian user to change.

Chapter ten presents a summary of the study's findings and draws final conclusions as a result of testing the research hypothesis and propositions. Results confirmed the third proposition that both users and practising architects in Palestine contributed to a certain extent to the transformation of the Palestinian house design. Then, recommendations and further research areas are suggested.



1. Chapter One

**The Palestinian User in the
West-Bank / Palestine:
Historical and Socio- Cultural
Background**

1.1. INTRODUCTION

It is our culture that makes us into specifically human, rational, critical and ethically engaged beings. Through it, we make valued judgements and choices. Through it, man expresses himself and becomes conscious of himself as an unfinished being; questions his own creations, searches unceasingly for new meanings and creates works that transcend himself (UNESCO: 1983)

This chapter presents the Palestinian user, and relates him/her to the context of the West-Bank/ Palestine. The history of Palestine, the Palestinian people, and the physical environment of the West-Bank are discussed. Then the main characteristics of traditional Palestinian society and the changes which have occurred within that society during the past century are put forward.

The main objective is to comprehend the circumstances and events the Palestinian user has gone through during the last century, and estimate the influence of the socio-cultural changes that have occurred within the Palestinian context on the Palestinian user. It is anticipated that reviewing the literature of this period will facilitate the identification and assessment of the extent to which change in the political and socio- cultural context of Palestine could have stimulated the user in contributing to change in house design.

However, to understand some aspects related to users and their potential contribution to change in house design, the contemporary Palestinian user is introduced as well as various issues related to change in his/ her attitudes, needs, requirements, satisfaction and preferences.

Finally, it should be mentioned that from the historical review of Palestine, it was discerned that the majority of Palestinian cities were reshaped as a result of the Arabic-Islamic culture which reached the area during the seventh century. Therefore most of literature reviewed on Arabic or Islamic cities apply to Palestinian urban centres, and will be used in this chapter and other chapters wherever needed.

1.2. HISTORICAL BACKGROUND

The human history of Palestine extends to over half a million years, however, its location between Africa and Asia have made the history of Palestine more complicated than that of other regions in the world. Over time, people from south and north have moved through it continuously (O'Connor, 1985:1). In 7000 B.C. Jericho, the oldest city in the world was founded (Dabbag, 1966: 362).

Between 4000 BC- 3000 BC immigration started from the dry, arid region of the Arabian peninsula to the fertile lands of Syria, Iraq, Palestine and Egypt. The Canaanites settled in the mountains of Palestine from 2500 BC to 1000 BC, thus the place was called (Canaanite- Land), while the Philistines, who were European immigrants from Crete, inhabited the coastal plains (Zakari, 1985: 323).

During the Persian Period 586- 332 BC, Palestine became a remote province of an empire that covered the whole of the Middle east. The Greeks also conquered Palestine during the Hellenistic Period (332- 63 BC), and were preceded by the Romans from 63 BC to AD 324. The Romans founded several important cities in Palestine. Their ruins still exist, and are among the most important archaeological sites there (Burgoyne, 1987).

Figure 1.1: Map of Palestine



Source: Gilmour, 1980: 70

The Byzantines conquered Palestine during the period A.D. 324- 636, but were defeated by the Muslim Arabs who came from the Arabian desert in AD 363. During the Muslim

era the Crusaders took hold of Palestine from AD 1099 until 1187. In 1291 Akko (Acre), the last Crusaders' stronghold, was captured by the Mamluke.

During the Mamluke rule A.D. 1250- 1517, Cairo was the capital. This period, however was generally a prosperous one in Palestine; local products were exploited in the manufacture of cotton goods and sweets; also during the same period, several buildings were erected, especially for defence purposes (Burgoyne, 1987).

Palestine was part of the Ottoman empire during the period 1517- 1918. It was divided into five districts, or Sanjaks, of which each was self governed under the control of the Damascus governor. Jerusalem and Nablus in Palestine were among these Sanjaks (Qamhieh, 1992).

The Turks sided with Germany in the First World War; however, losing the war resulted in the dismantling of the Ottoman empire. In 1918 Palestine was under the British mandate, which lasted until 1948.

During the last decades of Ottoman rule and the period of the British mandate, Palestine was a target for intensive immigration for Jews from all over the world. However, before the mandate, 90% of the population in Palestine were Arabs (Coon, 1991, Cited in Senan, 1993: 45).

In 1948 the coastal plains of Palestine, which contained several major cities, were captured by the Jews. Therefore, as a result, the eastern part of Palestine was annexed to Jordan, and was later called the West- Bank, while the Gaza strip was annexed to Egypt (figure 1.2). In 1967 Israel captured the rest of Palestine after a war between Israel and the Arabs.

Figure1.2: Map of Palestine after 1948 showing the West-Bank and Gaza strip.



Source: Gilmour, 1980 :71

By the end of 1987, Palestinians in the occupied territories of the West- Bank and Gaza, in their struggle to end the Israeli occupation, started an uprising (the Intifada) which was an unarmed civil protest.

The Intifada resulted in an agreement for a peaceful settlement for the Palestinian - Israeli conflict; this agreement was initially signed in 1993. Eventually, parts of Palestinian land with a large Arab population was given back to the Palestinians and self rule was established there under the Palestinian authority.

1.3. THE PALESTINIANS

The term Palestinians has been used by this study to refer to the native inhabitants of Palestine. However, the ethnic origins of Palestinians are highly diverse, and compounded. They are the descendants of the Canaanites, the Philistines, and other nations which settled in Palestine during its long history. The Muslim Arabs, in particular altered the character of the country in the seventh century, when the Palestinians accepted Arabic language and the majority of them adopted the Islamic religion (Gilmour,1980: 20). Today, the term is used to denote both Moslem and Christian Arabs who have lived in Palestine for centuries.

As a result of Israeli occupation of their land since the mid 20th century, Palestinians have been subjected to different ordeals. Two successive immigrations after the wars of 1948 and 1967 left more than half of the Palestinians as refugees outside their home land. Thus, immigration and social fragmentation are events that have accompanied Palestinians throughout their modern history and have left fingerprints on their life and their future.

For the last three decades, size of the Palestinian population has been determined by data based on estimates. The last census was carried out in 1967; however, according to the Israeli Central Bureau of Statistics, the West Bank population, excluding East Jerusalem, was 836,000 in 1986 (Zanoun, 1991: 86). Hajjar et al (1989, quoted in Yousof,1996:17) estimated the number of Palestinians world-wide as five millions, 40% of them, nearly 2.2 millions live within the West Bank and Gaza Strip.

According to the Palestinian Central Bureau of Statistics, the Palestinian population of the West- Bank is expected to reach 1,707,000 by the end of 1997. They are distributed between eleven urban centres (cities and towns) and 430 villages and the population density is 135 person/Km² (Tamari,1994: 17).

The Palestinian society in the West- Bank is divided into four groups:

Firstly, the urban population. They live in cities and towns, and comprise between 35,000 to 90,000 persons. Secondly, the village people or the peasants. They represent the largest percentage of the population in the West- Bank, up to 62%. Thirdly, the Palestinian refugees who left their homes after the war of 1948 and settled in the West-Bank. They represent 18% of its population (Tamari, 1994:19), however most of them are living in camps on the outskirts of the major cities. Fourthly, the Bedouin. They are few in number, and live in the desert in the southern part of the West- Bank, moving from one place to another in search of water and vegetation.

1.4. THE PHYSICAL ENVIRONMENT OF THE WEST-BANK/ PALESTINE

The term West- Bank is used to define the mountainous region of central Palestine. Its boundaries are defined by the river Jordan and the Dead Sea from the east, while its other three sides are bounded by the cease- fire line which was formed between Israel and Jordan after the war of 1948.

The total area of the West- Bank is 5575 Km² (Karmon,1971, Cited in Senan, 1993:). It represents about 20% of the total area of Palestine, and extends between 34.35 - 35.31 degrees longitude to the east, and between 32.38 - 31.20 degrees latitude to the north.(Maqbool, 1987:22)

Most of the population settlements are situated on high ground, and hills which had a level side suitable for habitation; the highest mountains are 1000m above sea level.

The West- Bank is situated within the region affected by the Mediterranean climate, which is generally pleasant, and moderate i.e. the average temperature is between 11 Celsius in winter to 22 Celsius in summer. The rainy season usually begins by early

November and continues until late April, however the amount of rain fall increases in the northern and western parts of the West-Bank.

Although the total area of the West- Bank is relatively small, it comprises wide variations of climatic and natural zones:

1. The internal plains which form part of the Palestinian coastal plains. It is a fertile land, and most of its inhabitants work in agriculture.
2. The mountainous region comprising the central mountains of Palestine, which extends from north to south, with an altitude of 3000 ft above sea level to 1300 ft below sea level near the Jordan river and the Dead Sea. These mountains contain most of the large cities, such as Nablus, Jerusalem, Bethlehem, Hebron. Its land is less fertile than the first zone.
3. The third zone named *Gor*, is a strip located on the western side of the river Jordan in a depression of about 1300 ft below sea level. This region is characterized by its hot and humid summer and cool winter, however it has fertile land used for the plantation of citrus fruit, banana, and vegetables (Maqbool, 1987:139).

1.5. THE PALESTINIAN SOCIETY

Light will be shed on the changes which have occurred within the Palestinian society during the last century, therefore both the traditional and the contemporary society of Palestine will be examined.

The main objective is to comprehend the change within the social context of Palestine, along with its impact on the Palestinian user, and to link both to the possible role the Palestinian user could have played in provoking change in house design.

1.5.1. The Traditional Society

The term, traditional Palestinian society, will be used by this study to refer to the society of Palestine that developed until the beginning of the twentieth century. Its background, main characteristics, and the Palestinian family, as a basic social unit, will be discussed.

The link between the socio-cultural aspects of the traditional house to its use, and the role the traditional user could have played to instigate change in house design, will both be investigated.

I. Background

Society in the traditional Palestinian city was usually composed of diversified groups of people, each living in a separate quarter. The structure of the traditional city was based on the cluster of urban divisions of different quarters; in each quarter, people with the same religious, ethnic, or clan background lived together. Thus the towns or cities in Palestine were composed of some grouping of families and neighbourhood quarters.

Lapidus (1969: 51) stressed that the quarters or the neighbourhood communities were the keystone of urban life in the Islamic city, in spite of being less coherent elements of the city.

.... the basic units of society were quarters, which were social solidarities as well as geographical entities. Small groups of people who believed themselves bound together by the most fundamental ties- family, clientage, common village origin, ethnic or sectarian religious identity, perhaps in some cases fortified by common occupation- lived in these neighbourhoods. (Lapidus 1969: 49)

Perhaps what characterises the early societies of Palestine is their structure which was based on the clan or the tribal element. Grant (1921:13) stated that back in time, Palestine was composed of numerous tribes. This was also the case in other early Arab societies; Lapidus (1973:51, 54) has argued that early Arabian societies inherited their order from the past and that the tribal element of social organisation characterised the early Arabic cities. He stressed that while the social life was developed in these cities, the clan always remained an essential unit in society.

Furthermore, Stern (1970: 26-30), in his discussion of the institutions within Islamic cities, found it obvious that urban life in Muslim cities owed a great deal to antiquity, while Costello (1977: 4) has remarked that many of the nomadic traditions and values, such as hospitality, were carried out to the city life after the Bedouins' transition from nomadic to settled life.

Religion, on the other hand, had its vital role in organising the social life of traditional communities in Palestine, as is the case among other traditional Arabic, Islamic societies. Lapidus (1973: 56,57) stressed the importance of religion in ancient communities. He argued that the ideals and norms of social action came from religious teachings, while the structuring of social life was brought forward by religious organisation. He stated that medieval Muslim cities resembled both the Arab clan heritage of small tightly knit communities and the near eastern tradition of incorporating diverse peoples into town populations.

Gulick (1969: 125-126) stressed the importance of the binding kinship ties, which are not limited to the members of the individual house. The idea behind the enlarged kinship organisation within Palestinian traditional societies, however, is the need for co-operative labour, necessary for farmers in a rural culture, while in an urban culture, it provided mutual support and protection among members of the kin- group against financial, medical, or social emergencies.

The traditional Palestinian society comprised both urban and village people. The village needed the town, while the town could not exist without the products of the village. Peasants of the village produced food and delivered it to the urban markets (Hourani, 1970: 16). However, during the seventeenth and the eighteenth century, the countryside suffered from insecurity caused by increased Bedouin raids, which encouraged some villagers to settle in nearby cities. (Issawi, 1969:105,106)

Traditionally, the Palestinian economy was mainly based on agriculture. No raw materials were available nationally, however, there had always been a small business community based on a few minor industries (Gilmour, 1980:31). For example during the eighteenth century, Nablus was the most prosperous town in Palestine, depending for its wealth on wheat and olive oil (according to C.F. Volney, cited in Gilmour 1980: 31). Soap made from olives had always been the main manufacture of Palestine. Nablus was the centre for soap making, although there were also factories in Gaza, Ramle and Hebron.

II. The traditional Palestinian family

The extended family was the keystone in the structure of the traditional, agrarian, Palestinian society. Therefore, until the expulsion of Palestinians in 1948, rural society was composed of the very rich families or the land owners, who based their power and wealth on the extended family, and the small farmers, who had to work, and depended on the extended family's support in agricultural jobs. (Kananaa, 1983: 152).

The urban population in Palestine also depended on the extended family, and the traditional family comprised three generations who used to live in the same house i.e. the family house. Within the walls of the traditional Palestinian city, relatives and less close members of the same family lived in houses accumulated in the same quarter. This guaranteed security and protection for each member of the large family.

The family was the basic and irreducible unit of social life in Palestine, thus, however closely the individual was associated with the life of his quarter, essentially he belonged to his family. The right and obligation of the family to live enclosed in its private house led to a clear separation between public and private life, which is the most significant social characteristic of the Islamic city (Petherbridge 1978: 195). Within the Palestinian society, the family traditionally had a basic role of providing services to the welfare of its members, whereas the family connections were and still are an indicator for social, and economic status within Palestinian society. (Ugland, 1994: 267).

To build a tribe or a great family, marriage was the mean, and it was a duty to be fulfilled by all sons and daughters, as part of their devotion to their family, often before their personal interests. The tribe or the family is called *Dar* (house) which denotes the importance of the family in the Palestinian society (Grant 1921: 49, 51).

Growth in the traditional extended family used to be reflected on the house, therefore whenever a son married, new rooms and spaces were to be added to accommodate him and his new family. Petherbridge (1978:198) remarked that Arab houses are never completed; as each extended family grows, so does the house. Thereby the traditional house reflects the family's history, growth and structure.

Building a house is a great occasion for the Palestinian family. Roofing of the house, which indicates that a great part of the work is finished, was and still is a time for celebration. Cannan (1933, vol. XIII: 20) argued that the construction of the house in Palestine used to take place over long intervals, however the advancement of the work depended on the owner's finances. Therefore years may elapse before the house is complete.

1.5.2. Change in the Social Context of Palestine

Advancement in the technology of communication and transportation facilitated exchange of ideas and views between different nations on the globe. Exposure to different cultures can result in improvement, development, and change of societies, which is called by social scientists, social change (Kanaana, 1982: 147).

Social change as a phenomenon was defined by Davis (1969: 147) as “ such alterations as occur in social organisation- that is, the structure and function of society”. On the other hand, Bottomore (1981: 297) defined social change as a “change in social structure including here changes in the size of a society, or in particular social institutions, or the relationship between institutions”.

In the case of Palestine, the structure, size, and function of society was altered mainly due to political reasons. The structure and organisation of Palestinian society was largely based on tribes and clans, which were gradually replaced by extended families, after which the nuclear family became the basic social unit. The size of Palestinian society experienced a sudden change due to loss of land and successive compulsory immigrations, while the function of the society was changed when agriculture was abandoned by villagers for waged labour.

Generally, various factors contributed to change the agriculturally based traditional society of Palestine. These can be summarised as:

Firstly, the change in land ownership brought by the Ottomans, in the late nineteenth century, which demanded all land holdings to be registered and for taxes to be raised on

them. Many peasants did not register their lands, while many others sold them to avoid paying taxes (Senan, 1993: 64). However, change from communal to private ownership was more thoroughly implemented during the British mandate (1918-1948).

Secondly, the introduction of waged labour, during the period of the British mandate, which drew villagers away from agriculture and attracted them to work either in the citrus industry in the coastal plains, or as British government employees. Furthermore, during the 1950s, labour migration was towards the rich Arab Gulf countries, while during the 1970s job opportunities were introduced for villagers in Israeli factories, farms, construction, and service sectors (Amiry & Tamari, 1989: 7)

Although the exchange of knowledge, culture, or technology, to a certain extent, could be mutual in between societies, this is not the case between East and West; thus the flow of ideas and the cultural effect during the last two or three centuries had been stronger in the direction from West to East. Therefore, the East was subjected to a wider cultural change and had to adapt to face the Western culture.

On the other hand, the difference in intensity and direction of flow of ideas between East and West was great, to the extent that a cultural change termed Modernisation started to appear as an international direction or trend (Kanaana, 1982: 147). Davis explained that social change forms only a part of what is essentially a broader category called “cultural change”

...the latter embraces all changes occurring in any branch of culture, including art, science, technology, philosophy, etc. as well as changes in the forms and rules of social organisation (Davis, 1969: 622)

Bottomore (1981: 297) argued that the term cultural change might be employed to refer to variation in cultural phenomena such as knowledge and ideas, art, religious and moral doctrines, etc. Thus what occurred in Palestine during the last century could be described as social and cultural change as both of them are closely linked in many cases.

By the end of the nineteenth century and the beginning of the twentieth century Palestine started to experience exposure to the outside world, mainly the West. The Palestinian

economy prior to this was self sufficient. Therefore, people used to consume locally produced and made products and export the excess of their production to nearby countries, while importing in return other needed goods. Describing the commercial activities in one of the Palestinian cities (Nablus), during the flourishing period of the eighteenth century. Al Nimir wrote:

Caravans used to leave the city loaded with exports of cotton and wool textiles. Copper, silver, and iron handicrafts, in addition to its high quality soap. Also other products of grains, and dried fruits. The caravans used to travel in different directions, however it would come back loaded with what the city would need, such as, ornamented weapons, cashmere and silk clothes, golden jewellery, and carpets (Al- Nimir, 1975, vol. 1:140) (Translated from Arabic).

Therefore the increase in foreign trade and the availability of imported goods in Palestinian cities led to a decline in the consumption of locally made goods among the urban population. The rising demand, and thus dependence on imports from the West, unfortunately affected the artisans and craftsmen who drew their living from providing goods to both urban and rural populations. But the impact was not uniform, and locally made articles remained in demand in the countryside (Smith, 1984: 29), (Graham-brown, 1980:106).

While many of the traditional guilds remained, their full control over local products was weakened due to the altered demand in the larger cities, and the spread of money payments. Although the demand in rural areas for traditional local products remained strong, a poor economical situation and the introduction of waged labour in the cities, led to the decline of traditional skills within the craft.

The result was a change in Palestinian society from a productive society which can satisfy the needs of its population to a demanding society that has to import goods which it could not easily afford or did not need in the first place. Al Nimir wrote describing the introduction of new products to Palestinian markets, especially the accessories:

They continued to bring one tool after another until the use of western products and utensils spread up as we see. The country is importing everything from abroad. They added on the accessories which no one in the country used to care about (Al- Nimir, 1975, vol.4: 205). (Translated from Arabic)

It was also a change from a society with skilful artisans who produced high quality handicrafts products to a society that could no longer appreciate what is locally produced. Consequently there was an abandonment and decline in the traditional skills within crafts, and the beginning of loss of continuity in traditional handicrafts, as local traditional skills were usually transmitted from one generation to another.

I. The contemporary Palestinian family

By the end of the 19th and the beginning of the 20th century the traditional Palestinian family started to encounter change. This was a consequence of the change which occurred within Palestinian society as a whole. Change in the traditional family was evident in four main areas, in alteration of the family structure, size, life style as well as the position and role of women in the family.

a) Change in the family orientation

Traditionally, as mentioned before, the Palestinian society was composed of groups of families, clans, and tribes, where individuals are unquestionably loyal to their families and clans. However, by the end of the nineteenth century, Palestinians had to face the Zionist threat to their land and identity. They had to unite and remain devoted and loyal to their nationality, not their family or clan (Abdul- Jawad, 1990: 488). However, this does not necessarily mean that ties between members of the same family were weakened.

b) Change in the family size

Alterations also affected the size of the traditional Palestinian family, thus the extended family was replaced by the nuclear family. In the past, the traditional family, housed in one home, used to extend to the third generation. Today the nuclear family is the norm. It comprises two generations, the parents and their children.

Contemporary Palestinian society is composed of nuclear families that have very strong ties between their members. This was clearly evident when the West- Bank suffered from an unsettled political and economic situation during the Israeli occupation, and the

family played an essential role in supporting and taking care of the young , the old, the weak, the poor, and the unfortunate members within one family. This was needed because of the absence of an organized public sector which usually takes care of social security in an organized way (Ugland, 1994, p.267).

c) Change in the family lifestyle

The lifestyle of the traditional family started to change at the beginning of the 20th century. This was evident in the trend found among wealthier families to leave the old cities for new residences outside.

Gilmour (1980:29, 30) described how the traditional Jerusalem families, who had lived inside the old city of Jerusalem for centuries, started to build outside the walls of the old town:

These families lived together in the old city until the end of the nineteenth century. In a remarkable display of historical continuity they lived in the same places fulfilling the same duties as their ancestors.....The second half of the nineteenth century saw rapid changes in the life style of these families. Until then they had lived deep in the old quarters of the walled city, split up among the Muslim areas and the smaller Christian, Armenian and Jewish quarters. Now they began to move out of the city. (Gilmour, 1980:29-30)

d) Change in the women's role in the family

Traditionally the basic role for women in the Palestinian society is inside their homes, taking care of their husbands, children, and the housework. However the female working role was limited. In the sixties, women primarily held agricultural jobs, and the old tradition which does not encourage women to work affected their participation in the job market. (Maqbool, 1987: 305)

As Palestinian women started to embark on higher education and to compete for better job opportunities, the traditional image of *Harim* or of women living in a secluded environment, vanished completely.

Eventually, alteration in the Palestinian family had in one way or another affected house design. For example changes within the size of the Palestinian family, from extended to

nuclear, has influenced house design in terms of size and layout. Therefore, the concept of a large family house disappeared to give way to the smaller, one family units.

Also the change in life style and the role of women in the family could have affected house design, since the strict separation between sexes adopted in traditional houses was no longer necessary in planning new houses.

II. The contemporary Palestinian user

The social and cultural change experienced in Palestine during the past century influenced to a certain extent the Palestinian family in general, and the Palestinian user in particular. His/ her requirements, needs, expectations, and aspirations consequently changed, and this would have more or less influenced house design either directly or indirectly. However, the effect was manifested in a change in house form, which resulted in a transformation in the Palestinian built environment.

Change in the built environment as a phenomenon can be seen to be a result of two processes which act either from within or from the outside of a certain context or in both directions.

a) User role in change from within a social context

Change from within a context can be caused by people living in that context. Lawrence (1987:22) argued that people's (user's) contribution to the development of vernacular architecture could be interpreted by applying the concept of social diffusion, which he explained as "the spread of ideas, practices or customs from the gentry to the peasant class".

He used Raglan's explanation of the process (1965: 382, Cited in Lawrence, 1987:22): usually, new types of artifacts are made for the rich and the powerful in a society, and as a result of being adopted by the higher class, these artifacts become fashionable and popular. Thus lower classes start to express an interest for these. Ultimately, cheap specimens are produced in quantity to satisfy the large demand among people of these classes.

The idea is that the upper class in a society are most of the time acting as generators for change by encouraging the adoption of new ideas. Kuban (1983: 54,55), and Serageldin (1983:15,16) argued that the old bourgeois, in the Islamic world, have always encouraged changing ideals of the society, and were responsible for imitation of the West and the aspiration for a life style which they learn of through the media. Taylor (1986:19) has argued that the influence exerted from other cultures on the developing countries since 1950s, was to a large extent a result of the power of the media, both printed and audio-visual.

Tekeli (1986:65) remarked that according to the pattern of income distribution, a variation in architectural taste exists between people in the same country. Thus, while people in higher social strata tend to differentiate their architectural taste and housing consumption, people in lower social strata accept the taste of the higher strata as their reference group. Cejka (1982) argued that the society generally tends to imitate the lifestyle of the upper classes, trusting the example they give.

It should be noted here that the wealthier families of Jerusalem, Nablus, and Jaffa in Palestine were the first to move out of the old city centres to handsome stone houses on the outskirts (Graham-Brown, 1980: 118).

b) Changes from outside a social context (outside effect on user)

On the other hand, change in the built environment as a result of processes from outside could be interpreted by employing the concept of geographical diffusion. It was explained by Doglas (1973, cited in Lowrence, 1987:23) by relating the change of vernacular architecture of non- Western countries to the introduction of new technology and construction techniques by foreigners, or the imitation of local people to the foreign architecture or construction techniques. Furthermore, Lawrence linked the influence on domestic architecture in colonies with the concept of geographical diffusion.

To summarise, change of the traditional Palestinian architecture from outside could be interpreted by employing the concept of geographical diffusion which is related to the

influence of the colonial powers, i.e. the British, and the Israeli, on the traditional built environment and the indigenous built forms of Palestine. The influence on Palestinian house design during the British mandate could be discerned through the popularity of the extroverted villa house type i.e. the central hall house and the introduction of foreign motives which was used intensively to decorate elevations of that house type, while the impact of the Israeli occupation on the Palestinian architecture is evident from the use of new materials and building techniques adopted from Israel. However the impact of the colonial powers on Palestinian architecture is beyond the scope of this research.

On the other hand, social diffusion could be employed to explain change exerted from within the Palestinian context by users, on the built environment, which is partly the concern of this study. Thus Palestinian users within the Palestinian society could have contributed to the transformation of the Palestinian house design by encouraging the adoption of new ideas and design concepts.

III. User's attitudes

Apparently, change in the Palestinian socio-cultural context can suggest that attitudes of the Palestinian user will change as a result, and accordingly, certain social and cultural aspects which warranted consideration in traditional houses might be of less importance in the new house.

While talking about attitudes, a definition is needed. However, to give a definition of attitude is not simple as it is more easily measured than defined (Dawes, 1972). Attitudes have been defined as a state of mind of the individual towards a value (Allport, 1935, quoted in Dawes, 1972), and were described as complexes of ideas and sentiments, and predictive of conducts (Cohen, 1973). They have been more inclusively defined as:

A mental and neural state of readiness organised through experience exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. (Allport, 1967: 8)

For example, the changing attitudes among contemporary users towards privacy transformed certain aspects of the dwelling (Serageldin, 1983:15). Users today are less

conscious of the privacy of their houses, relative to visitors, compared to users of traditional houses, thus the strict separation between the two sexes within the house layout adopted in old houses is no longer needed in new houses. Also the change in house design from the introverted to the extroverted design concept followed the decrease in consciousness among users of privacy relative to passers-by and surrounding houses.

On the other hand, change in attitude towards the family size, and preference among contemporary users for a small nuclear family rather than a large extended family, affected to a large extent the house layout. The size of the house was reduced, different functions within the house layout were identified according to the family's requirements, and spaces were allotted specific functions.

Furthermore, attitudes towards hospitality changed, thus the scale of entertainment of guests was reduced among contemporary users if compared to traditional users. Consequently different spaces needed for certain occasions were adapted following a change in attitudes.

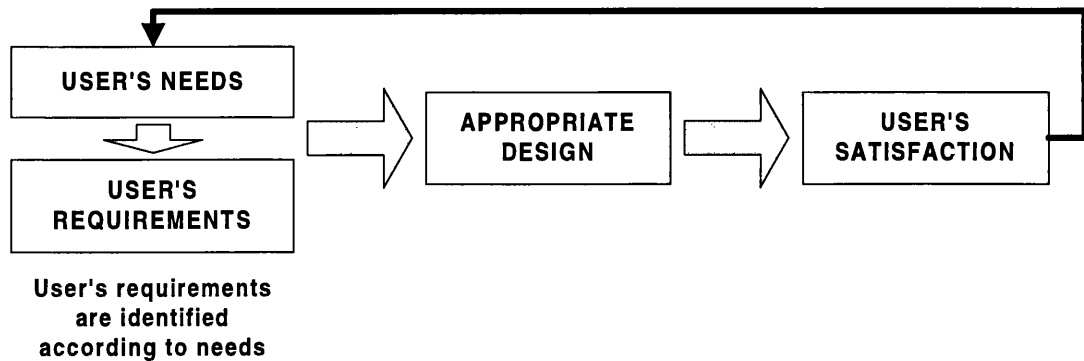
The adoption of the extroverted concept of house design which replaced the introverted traditional concept allowed users to express their new attitudes towards a preference to exhibit wealth, social status, and identity, thus the extroverted house gave users the opportunity to express themselves through the exteriors of their houses (Serageldin, 1983:17).

IV. User's requirements, needs, satisfaction and preferences

Hanson (1969:37) defined a requirement as “ a situation that must be present otherwise an observable human or social need would go unsatisfied”. Vischer (1985:29, quoted in Lawrence 1987: 155) explained that user satisfaction is related to fulfilment of need, while preferences are related to wants. She also stressed that the primary objective of design is to meet the user's needs, achieved by an appropriate design. On the other hand, a good facility (house) from the user's point of view is a design that works in relation to

the intended activity and perceived needs (Kernohan et al., 1992:17). Figure 1.3 indicates that the arrival at an appropriate design is essential to achieve the user's satisfaction, thus the appropriate design is an intermediate stage between identifying the user's requirements, according to his/ her needs, and accomplishing satisfaction.

Figure 1.3: Diagram indicating the relationship between user's needs and requirements, appropriate design and user's satisfaction.



Rapoport (1969:61) argued that one of the aspects that determines the form of the house is the how “need” is defined by a group, while what is significant about culture is the specific solution to certain needs.

Therefore, if requirements that satisfy needs of a certain group of people were identified, an appropriate design that can satisfy these requirements could generate satisfaction among those people. On the other hand, while traditional solutions for house design satisfied certain requirements and needs among people, socio- cultural changes can change the definition of needs for those people, and consequently this can change their requirements and affect the design solutions which might be appropriate to generate satisfaction.

Human need was identified by Maslow (1987). He argued that human needs could be classified in a gradual progression from lower to higher needs, and that the individual follows this development until arriving at self- actualisation. He proposed five levels of hierarchical order: physiological needs (home, food, and sex), safety needs (security, stability, dependency, protection etc.), belongings and love needs, esteem needs, cognitive need, aesthetic need, and need for self actualisation.

Moreover, Gehle identified three different types of needs that should be satisfied in a living environment: physiological needs, safety needs, and psychological needs (Mikellides, 1980: 191, 192). Cooper, (1975, cited in Lawrence, 1987: 161) using Maslow's list for basic needs, established a hierarchy of housing needs as shelter, security, comfort, socialisation and self- expression, and finally aesthetics. Human or basic needs were described as innate or omnipresent (Lawrence, 1987:159).

It could be discerned that while basic needs could be defined and identified within a wide scope applicable to human beings of different cultures and times, the difference could be in defining and interpreting these needs on a narrower scale within specific contexts, cultures and periods of time. This can suggest that what is appropriate and satisfactory as a design solution for a certain group of people of the same culture at a certain time might not be appropriate and satisfactory for them in the future. Thus what was acceptable for them in the past most probably will not be acceptable in future.

For example, while it was comfortable and convenient for users of the traditional courtyard houses of Palestine to use the open courtyard as the main circulation space, i.e. they had to move from the inside of the house to the outside while moving from one room to another, in the later development of the central- hall house Palestinian users found that it was climatically more convenient and comfortable to use a covered central circulation space. Thus they were no longer satisfied with uncovered circulation space, and design solutions had to change to satisfy users at that time.

In general, users seek satisfaction in their living environment, Therefore the task of the designer is to find the elements of physical design that have been commonly linked with satisfaction and pleasure, then incorporating these elements into design will generate satisfaction (Shelly,1969, cited in Bechtel, 1977:8).

1.6. CONCLUSIONS

This chapter gave an account of the Palestinian user and reviewed his/ her contextual background. The West-Bank region in Palestine was introduced in terms of history, people, physical environment, and society.

During the last century Palestine has undergone social and cultural change, manifested in change of its agriculturally based society, and the exposure to Western culture which resulted in change in the Palestinian family's lifestyle, structure and size. This has to a large extent influenced the Palestinian user and altered his/ her attitudes, requirements, aspirations, and preferences, and consequently his/ her satisfaction with the traditional concepts of house design. Therefore, the change which has occurred in house design in Palestine during the past century could be linked to changes in the historical, social, and cultural context of Palestine.

The architect's responsibility is to produce an appropriate design solution that can satisfy the requirements of the user identified according to his/ her needs. If this is achieved, satisfaction of users can be generated, although satisfaction in a certain period of time is not absolute as user's satisfaction can be influenced and changed by time.

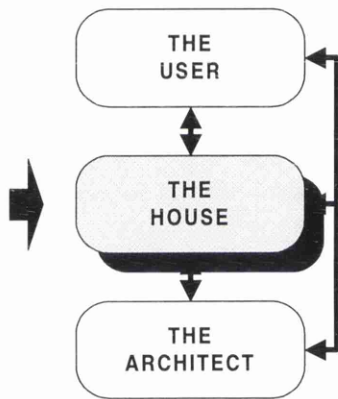
Change or development in house design could be seen as a normal organic process which occurs following the change in users' requirements, which are susceptible to change by time or as a result of alterations in socio -cultural, political, economic, or environmental aspects.

1.1. REFERENCES

- ABDUL- JAWAD, S.(1990): "The Development of Palestinian National Struggle from the Beginning of the Zionist Settlement and Until the Division" (in Arabic), in *The Palestinian Society - forty years for the catastrophe and twenty one years for the occupation of the West Bank and Gaza strip*, Centre of the Arabic Heritage, Al Amal Press, Jerusalem.
- ALLPORT, G. W.(1967): Attitudes, in M. Fishbein (ed.), *Attitudes Theory and Measurement*, John Wiley and Sons, New York, pp.8.
- AL-NIMIR, I (1975): *The History of Nablus mountain and the Balqa*, (in Arabic), vol. 1-4, Nablus.
- AMIRY, S., TAMARI,V. (1989): *The Palestinian Village House*, The British Museum, London.
- BECHTEL, R.B. (1977): *Enclosing Behaviour*, Dowden, Hutchinson & Ross, Inc. USA, pp. 1-15.
- BOTTOMORE, T.B. (1981): *Sociology: A Guide to Problems and Literature*, George Allen & Unwin, London, Boston, Sydney, Part V.
- BURGOYNE, M. H. (1987): *Proposal for the Restoration and Conservation of the Old City of Nablus*, A report prepared for the municipality of Nablus.
- CANAAN, T.(1933): " The Palestinian Arab House: Its Architecture and Folklore", *The Journal of the Palestinian Oriental Society*, Vol. XII, XIII, pp.223-247,1-83.
- CEJKA, J.(1982): "Regional Tradition and its Application Contemporary Architecture", *The Jordanian Engineer*, Amman, No.27, pp.90-100.
- COHEN, P.S.(1973): " Social Attitudes and Social Enquiry", in N. Warren, M. Jahoda, (eds.), *Attitudes: Selected Readings*, Second edition, Penguin Books, Great Britain.
- COSTELLO,V.F.(1977): *Urbanisation in the Middle East*, Cambridge, University Press, London, New York, Melborn.
- DABBAG, M.M. (1966): *Our Country Palestine* (in Arabic) , Part (1) Section 2 , Dar Attalia, Beirut.
- DAVIS, K. (1969): *Human Sociology*, The Macmillan Company, New York, Ch.XXII.
- DAWES, R.M. (1972): *Fundamentals of Attitude Measurement*, John Wiley & Sons, INC., New York.
- EGELIUS, M.(1980): " Housing and Human Needs: the Work of Ralph Erskine", in B. Mikellides (ed.), *Architecture for People*, Studio Vista, London. Pp.135-148.
- GILMOUR, P.(1980): *Dispossessed: The Ordeal of the Palestinians*, Sidgwick & Jackson, London, Part One.
- GRAHAM-BROWN (1980) : *Palestinians and their Society 1880- 1946* , Quartet Books, London, Melbourne, New- York.
- GRANT, E.(1921): *The People of Palestine: An Enlarged Edition of the Peasantry of Palestine, Life, Manners and Customs of the Village*, J.B. Lippincott Company, Philadelphia, London.
- GULICK, J.(1969): "Village and City: Cultural Continuities in Twentieth Century Middle Eastern Cultures" in I. Lepidus (ed.) *Middle Eastern Cities*, United California Press, Berkeley, Los Angeles.

- HANSON,K. (1969): " Design from linked requirements in Housing Problem", in eds. Broadbent ,g, Ward, A., *Design Methods in Architecture*, Lund Humphries, London,pp.37-44.
- HEIBERG, M. BRUMBORG, H. et al (1994) : *Palestinian Society in Gaza, West Bank and the Arab Jerusalem: A Survey of Living Conditions*. (Arabic translation), Institute of Palestinian Studies, Beirut.
- HOURANI, A.H. (1970): " The Islamic City in Light of Recent Research " in Hourani and Stern (ed.) *The Islamic City*, Bruno Cassirer Publisher Ltd, Oxford.
- HUGH,M., ROBERTS,P. (1979): *An Urban Profile of the Middle East*, Croom Helm, London.
- ISSAWI, C.(1969): " Economic Change and Urbanisation in the Middle East" in I. Lapidus (ed.) *Middle Eastern Cities*, United California Press, Berkeley, Los Angeles.
- KANAANA, S. (1982) : *Continuity and Change, Studies for the Impact of Occupation on the Arabic Palestinian Society* (in Arabic), Institute of Arabic Studies, Jerusalem.
- KERNOHAN, D., GRAY, J., DAISH, J., with JOINER, D. (1992): *User Participation in Building Design and Management*, Butterworth Architecture, Oxford, Londn. etc. Ch.2.
- KUBAN, D. (1983): "Modern Versus Traditional: A False Conflict?", *Mimar* no.9, July- September, pp. 54-58.
- LAPIDUS, I.M.(1969): *Middle Eastern Cities*, United California Press, Berkeley, Los Angeles.
- LAPIDUS, I.M (1973):"Traditional Muslim Cities: Structure and Change", in L. C. Brown (ed.) *From Medina to Metropolis: Heritage and Change in the Near Eastern City*, The Darwin Press, Princeton, New Jersey, pp. 51-69.
- LAWRENCE. R.J. (1987):*Housing Dwellings and Homes: Design Theory, Research and Practice*, John Wiley & Sons, Chicago, New York...etc. Ch. 1,5.
- MAQBOOL, N.H. (1987) : *Demographic Conditions in the West- Bank* (in Arabic), Society of Arabic Studies, Jerusalem.
- MASLOW, A (1987): *Motivation and Personality*, Harper & Row, New York, 3rd edition, Ch.2.
- MIKELLIDES, B. (1980): Appendix on Human Needs, in B. Mikellides (ed.) *Architecture for People*, Studio Vista, London. pp.191-192.
- O'CONNOR, J. M. (1985): *The Holy Land- An archaeological Guide from Earliest Times to 1700* , Steimatzky Ltd., Great Britain.
- PETHERBRIDGE,G.T.(1978): " Vernacular Architecture: The House and Society, in Mitchell (ed.) *Architecture of the Islamic World*, Thames and Hudson, London.
- QAMHIEH, K.(1992): *Saving the Old Town of Nablus, A Conservation Study*, Unpublished Ph.D. Thesis Mackintosh School of Architecture, University of Glasgow.
- QASIFI, G. (1985): " Palestinians Immigration from the West- Bank and Gaza Strip" (in Arabic), in *The Demographic characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut.
- RAPOPORT,A. (1969): *House Form and Culture*, Prentice-Hall, Inc., N.J.Ch.3.

- SAMHA, M.(1984): " The Demographic Changes in Palestine, A Study in the population Growth and the Demographic Struggle" (in Arabic), in *The Demographic characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut.
- SENAN, Z. (1993): *Political Impacts on the Built Environment: Colonisation and the development of place identity. The case study of rural west Bank (Palestine)*, Unpublished Ph.D. Thesis, University of Newcastle upon Tyne.
- SERAGELDIN, M.(1983): " Popular Housing in the Middle East", *Exploring Architecture in Islamic Cultures: Architecture and Identity*, Proceedings of the Regional Seminar in the Series Exploring Architecture in Islamic Cultures, The Aga Khan Award for Architecture, Kuala Lumpur, Malaysia, July 25-27, Concept Media, Singapore, pp.15-20.
- SERAGELDEN, I (1989): " Architecture and Society: the Major Linkage", in *Space for Freedom: The Search for Architectural Excellence in Moslem Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, Boston, pp.255-259.
- SMITH, P. A. (1984) : Palestine and the Palestinians 1876- 1983 , Croom Helm, London.
- STERN,S.M.(1970): "The Constitution of the Islamic City" in Hourani and Stern ed. *The Islamic City*, Bruno Cassirer Publisher Ltd, Oxford.
- TAMARI, S. (1994): "Transformation of Palestinian Society: Fragmentation and Occupation" (Arabic trans.), in *Palestinian Society in Gaza, West Bank and the Arab Jerusalem: A Survey of Living Conditions*, Institution of Palestinian Studies, Beirut.
- TAYLOR, B.B. (1986): " Perspectives and Limits on Regionalism and Architectural Identity", *Mimar*, no. 19, January- March, pp. 19-21.
- TEKELI, I.(1986): " Architecture and Society", *Architectural Education in the Islamic world Architectural Education in the Islamic World*, Aga khan Seminar Proceedings, Granada, Spain, April 21-25, Concept Media Ltd. Singapoer, pp. 65-87.
- UGLAND, O., TAMARI, S. (1994): "Manifestations of Social Stratification" (Arabic trans.), in *Palestinian Society in Gaza, West Bank and the Arab Jerusalem: A Survey of Living Conditions*, Institution of Palestinian Studies, Beirut.
- UNESCO (1983): *Declaration in Mexico: Polices of Culture from Theory to Practice*, UNESCO, no.3.
- YOUSOF, M.A. (1996):*Conservation of Cultural Heritage in the "West Bank" Under Occupation: The Case Study of the Old City of Nablus*, Unpublished Ph.D. Thesis, York University.
- ZAKARI, A.(1985): " A Comparative Demographic Study for Arab Residents before the Zionist Occupation in 1948 and After" (in Arabic), in *The Demographic characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut.
- ZANOUN, F. (1991): *Fertility Preferences of Arab Population in the West Bank*, Unpublished Ph.D. Thesis, Glasgow University, UK.



2. Chapter Two

The Palestinian House: Development of Design and House Typologies

2.1. INTRODUCTION

This chapter traces the development of house design in Palestine. It presents different house typologies which have evolved there over time. However, more focus will be confined to the traditional courtyard house, which is the indigenous type developed until the early twentieth century. This investigation discusses the traditional dwelling's main characteristics, as well as its adaptation to the climatic, cultural, and social context of Palestine. Other house typologies identified by the study, the colonial (covered central-hall) and the modern house in Palestine will be briefly discussed, and empirical analysis of house profile (*Chapter 5*) and house condition (*Chapter 7*) will shed more light on their main characteristics within the scope of this research. The main emphasis is on the traditional Palestinian house, as it is important to comprehend the quality of its design and the forces behind its layout configuration. Empirical investigations into the traditional house type have confirmed the present devastating situation which these houses are in as a result of recent alterations to their layouts, in addition to ill maintenance, neglect, destruction, and most of all lack of appreciation.

Literature used in this chapter mostly concerns the Arab house (Syrian, Iraqi, or Egyptian). However, the courtyard house in the Arab world has universal design and layout characteristics with overriding concern for privacy, which equally applies to the traditional courtyard houses of Palestine

2.2. THE COURTYARD HOUSE

The traditional Palestinian courtyard house was developed by the people of Palestine over centuries through a process of trial and error. It succeeded in satisfying the requirements of their culture, religion, and domestic life, and was the only acceptable model of domestic architecture until the early twentieth century.

2.2.1. Definition

Two basic courtyard house types were common to the Middle East and the Mediterranean region, namely the interior courtyard house, peculiar to urban areas, and the exterior courtyard house associated with rural areas (Petherbridge 1978: 199).

The interior courtyard house is primarily the blueprint upon which traditional architecture of the Arab world, including Palestine, is based on. It is an inward looking design scheme with a central, open to sky courtyard. Around this, several rooms and spaces are grouped, and all are directly accessible .

The external courtyard house is often found in rural areas of Palestine. Its courtyard (*hosh*) has a peripheral location within the overall layout of the house, usually at one side of the house or at the front (Fethi and Rifai 1993: 6).

The term courtyard house, however, is used by this study to denote the first type, the Palestinian urban house, which has a central, internal, open to sky courtyard.

2.2.2. Relationship Between the Traditional Palestinian House Form and its Context

The structure of the traditional Palestinian city was based on the division of its urban fabric into several entities, each of which was a neighbourhood or a quarter (*hara*). Kostof described the urban tissue of the Islamic city as having " the most inherently natural urban divisions". He remarked that the dividers were the few through streets of the city (Kostof 1992: 106).

Basically, the greater part of the city was formed of quarters, composed of private houses and their access routes (Morris,1993: 389). Each quarter of the city was connected with a primary street, however within one quarter a network of secondary streets connected several cul-de-sacs, which in turn give access to individual houses (Hakim 1986). A track from the bazaar (primary street with main commercial activities) with its animated and bustling nature leading to the quieter, residential quarters reveals the hierarchical relationship between the public and the semi- private spaces within the city.

Off the bazaar branch the major streets of the various quarters. Off these run smaller streets which eventually dissipate in blind alleys. As the stranger leaves the hubbub of the bazaar he becomes aware of an enfolding quietude.... the sense that this is private space which he is violating. (Robinson 1982: 216)

The contrast also existed in the street's width between public thorough- fares and semi-private and private alleys. Streets within residential quarters are much narrower "often

within touching distance on either side", with a semi- private and intimate atmosphere (Hugh and Roberts 1979: 39).

Each quarter within the city was not architecturally emphasised as a separate unit, thus the cellular urban structure of the city was composed of physically linked neighbourhoods. Buildings belonging to two different quarters shared, in most cases, the same walls. Although the quarter was formed of closely knitted groups providing security and social identity, it was not isolated from the city. The social self- sufficiency of the quarter never prevented participation in the city's communal and economic affairs (Petherbridge 1978: 195).

The indigenous courtyard house of Palestine was the main unit that composed the residential quarters. It developed as an essential component of the Palestinian cities' urban fabric providing a very compact structure within the limit of each city's wall.

2.2.3. Layout

Traditional houses of Palestine form the bulk of the cities' urban fabric. They were built attached together as one mass. Only courtyards and private gardens punctuated the massiveness of the urban structure. Most houses, usually, have one elevation that faces the street, while few larger houses may have two elevations (sometimes more) where windows open to the outside to face the street or private gardens. The concept of the inner central courtyard house allows for all spaces and rooms to be arranged around the courtyard and look inward towards it for natural light, sun and ventilation (Al- Azzawi, 1984: 54).

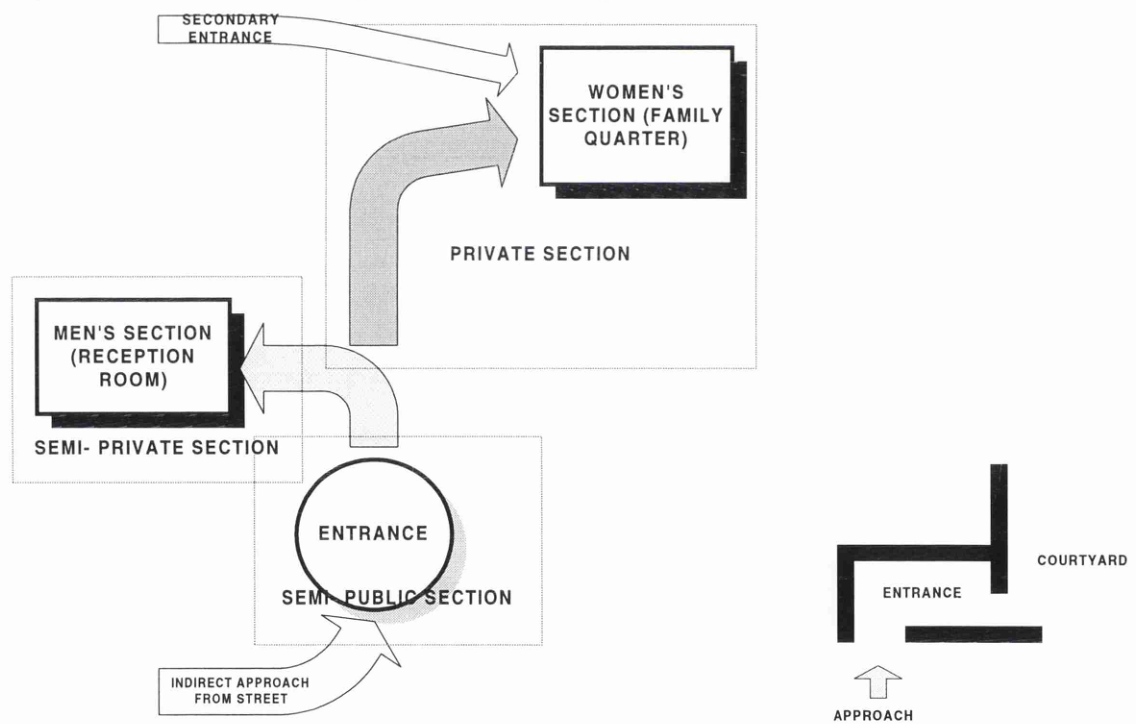
The Palestinian house was basically planned with maximum efficiency in utilising its building plot. Despite restrictions of irregular sites, traditional Islamic builders were, in most cases capable of organising regular interiors, especially on the upper floors of the house, where more internal spaces and right- angle corners were created by projecting rooms over the street (Petherbridge 1978:201).

The Palestinian house layout is structured consistent with the progression from public to semi-public then to private and protected areas, therefore its planning was based on the

separation of functions according to degrees of privacy. Accordingly, the reception room and other facilities used by male visitors were totally separated from those private rooms used by women and the family.

Traditional houses in Palestine were mainly composed of elements usually found in an Arabic, or Islamic house, i.e. an indirect, bent, or blind entrance, courtyard(s), men's, and women's quarter. It also illustrates the relationship between different components of the house, and the level of privacy they provide.

Figure 2.1: A diagrammatic representation of the layout of the traditional Palestinian house



Scale and complexity of the house layout were determined according to the economical means of the owner (Nimir, vol.2, 1975:105). The size of the Palestinian town house may range from small with two to three rooms to large houses, which consist of several apartments and levels (Canaan, 1933: 229).

I. The entrance (semi- public section of the house)

The importance of the entrance as a transition element within the house layout is discerned through its location between public, or semi-public streets and private space of the house. Access to the traditional house is usually limited to a single entrance, although a second one existed sometimes for the use of women or servants (Petherbridge 1978: 197).

The entrance is generally designed to prevent direct visual access to the courtyard from the street (Hakim 1986: 96); it usually opens to a vestibule or passage with a right- angle turn so that it is not possible to see the court from outside (Briggs 1974: 147). The approach to the entrance was also indirect along a tunnel or a passageway.

The approach to the entrance may be devious and indirect, possibly along a tunnel or a vaulted passageway sometimes with blind entrances. Always there is a screen wall behind the door to prevent exposing the interior courtyard to direct view. (Gazzard, 1984:23)

To signify the importance of the passage from the public to private domain, the entrance was large, monumental, or decorated with colour and symbols (Robenson 1982: 218). However, in contrast with the blank street elevation, decoration was only confined to the entrance (Gazzard, 1984:23).

II. The courtyard in the Arab house

The courtyard is called *hosh*, *wast ed-dar*, and *sahn ed-dar* which denotes an enclosed space or the centre of the house (Cannan, 1933: 40). It is the major design element of the traditional Palestinian house. It refers to an enclosed, open to sky, internal space, with rooms and living spaces clustered around on one, or two levels. However in certain cases, when the court is not completely surrounded by the living spaces of the house, the gap could be closed by a high wall (Cannan, 1933: 40).

The courtyard forms the centre or focal point of the house, and symbolises its main reference space. All adjacent spaces are linked by the court space, thus almost all circulation lines running away from, and into surrounding spaces run through the courtyard (Noor, 1984: 62).

Approached from street via a bent axis entrance designed to avoid direct vision by passers-by, the courtyard provides privacy for occupants, and serves as an open air

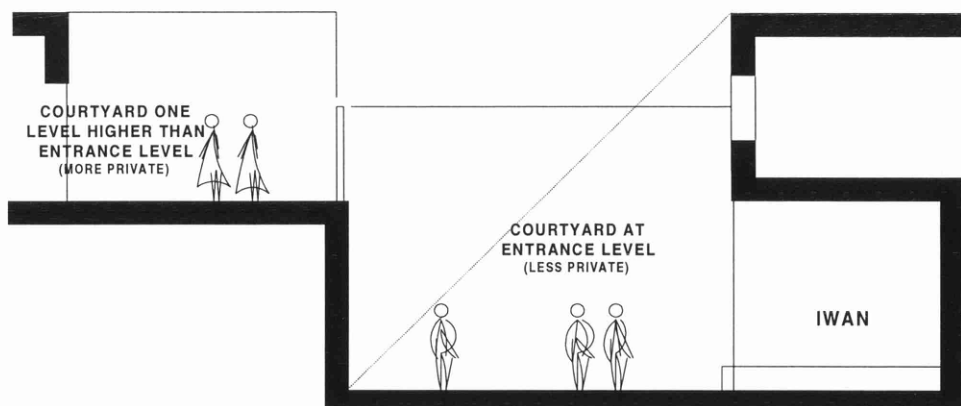
family living room, particularly in summer (Al-Azzawi, 1984:54). In fact, the courtyard could be the most commonly used living space in the traditional house.

The number of courtyards found in the traditional Bghdadi house differs according to the size of the house; however, small houses usually have one courtyard, while large houses may have two, or more, i.e. one courtyard, directly approached from the house entrance, where men of the household would entertain, and an inner, smaller, more private, family courtyard(s), which is (are) essentially the domain of women of the household. Traditionally the men's entertaining rooms, or reception room, would be reached from the street without approaching the women's quarters (Fethi &Roaf, 1984:41).

In the case of traditional houses in Nablus, with more than one courtyard constructed on different levels, one courtyard acts as a terrace overlooking the lower one (Qamhieh, 1992: 57). On the ground floor a covered space is usually built adjacent to the courtyard; it is called *Iwan* (Nimir, vol.2, 1975:105). Yagi (1984:343) classified types of spaces within Syrian houses into enclosed, semi-enclosed, and open space. Thus within the traditional Palestinian house, rooms are enclosed spaces, the courtyard is an open space while the *iwan* is a semi-enclosed space.

Figure 2.2 illustrates the relationship between two courtyards. It shows an *iwan* that opens on to the lower less private court, while the upper court overlooks the first one and provides more privacy.

Figure 2.2: Section through courtyards on two different levels.



Shape and size of the courtyard depends on the size and shape of the building plot. The plan of the courtyard is usually of rectangular or square shape, but sometimes it can assume irregular shapes. The size of the courtyard was not usually enlarged in larger houses, even when the size of the building plot allowed for it, because the shade afforded by surrounding building would be lost in any larger open space. Thus two or more courtyards were provided with rooms clustered around them instead of one big courtyard (Hugh and Roberts 1979: 40).

The courtyard provides daylight and natural ventilation for surrounding spaces (Al-Azzawi, 1984:54). It is usually surrounded and protected by walls, *iwans*, loggias, and galleries, and its floor paved with stone tiles (Briggs 1974:150). Spacious courtyards may contain fountains, and inner gardens planted with trees and flowers. The evaporation of water and the presence of plants both raise the humidity in dry climates providing a pleasing atmosphere (Petherbridge 1978: 200). The correct proportioning of the courtyard, the shaping of the skyline it provides, and the sense of scale all add to its pleasant atmosphere (Noor, 1984: 62).

Adoption of the inwards looking scheme of house design resulted in a compact layout of traditional cities of Palestine and reduced land waste to the minimum. 25% of the total area of a traditional Islamic city was spared for private courtyards (Antoniuo 1981: 23).

III. The men's quarter (semi- private section of the house)

Approached directly from the entrance, this section of the traditional house is accessible to visitors, and occupied mainly by men. The area reserved for the men's quarter within the house layout was determined according to the size of the house. It includes the men's reception room *diwan*, *majlis*, an important room in the house, which asserted the economic status of the family in the quality of furniture, decoration and the display of possessions (Robenson 1982: 219). The reception room or the guest- room was usually larger than the other rooms of the house (Cannan, 1933: 53)

In the reception or guest room, guests were entertained and major family occasions celebrated. The construction of the reception room was a priority; in poorer houses with no guest room, the father's room was used as a guest room, and a separate room for visitors was added to the house when economically possible (Petherbridge 1978: 184). Adjacent to the reception room, facilities for preparing traditional refreshments for the guests were provided. In larger houses the men's quarter included facilities for servants and stables. Rogers wrote describing the men's reception hall at the house of the governor of Nablus in 1855; the house which the governor was proud of having designed himself.

We were conducted into a vast open court, paved with marble, and the governor came out to meet us, and led me into the divan or reception-hall, where a number of Muslim gentlemen were assembled. They rose from the raised divans, which were arranged on three sides of the room.....The white walls were ornamented with blue arabesque borders, painted onto fresco. The arched windows and large doorway were of Saracenic form. A part of the floor was raised a few inches to form a dais, and was spread with handsome carpets. (Rogers 1989: 262)

IV. The women's quarter (the private section of the house)

The greater part of the house was the women's domain, known in Arabic as the *harim*. The meaning of the word is related to *haram* or sacred area, which indicates the ultimate privacy of this section (Robenson 1982: 219). Briggs stated that the term was misunderstood and that (*Harim*) simply means the private apartment used by the owner and his family (Briggs 1974: 153). This section is usually designed around a courtyard in which much of the woman's life was centred (Robenson 1982: 219).

In larger houses for wealthier families the male and female quarters may be lodged in two separate buildings, or two courtyards will be provided, one for the male visitors and the other for the private life of the family (Petherbridge 1978: 198).

V. Private gardens

In most large houses private gardens planted with fruits and citrus trees were annexed to the house. The size of these gardens was determined by the land available to the owner. Usually they are accessible from a courtyard. The garden, when found, contributed to the enjoyable atmosphere of the house, and provided its occupants with fresh fruit.

2.2.4. Exterior Facade of the House

The inward looking house design scheme of traditional houses and the preoccupation with the interiors of these houses resulted in a neglect in treatment of their exterior elevations (Fethi &Roaf, 1984:41). The street elevation of the house was usually kept very simple. Decoration and intricate ornaments were reserved for the interior elevations of the courtyard.

The house in a way has its back elevation to the street, and opened inward towards the courtyard. Kostof described the street facade of the houses as a boundary wall, which does not contribute much to the street. He stated:

When the houses are combined with ground floor shops, the dual function of the street is perfectly expressed in the nature of the street wall: they are at once the street front and the back of the house. (Kostof 1992: 198)

Usually one facade of the house faces the street. It is blank with limited size windows. On the street level, windows were elevated to an extent that prevents passers-by from viewing the inside of the house. Windows of the upper stories were generally larger and may have had a considerable projection to admit light and air, however care was taken not to overlook neighbouring courtyards or terraces (Petherbridge 1978: 197). *Mashrabiya* or wooden window screens were often used to provide privacy for the house.

2.2.5. Interior Spaces and Furniture

Interior spaces in the Arab house were not allotted to specific functions. The same space was used for different activities such as sleeping, eating etc. The flexible usage of space was reflected in the simple furniture used in the house (Petherbridge 1978: 199).

Traditionally, the furniture used in the Palestinian house consisted of a few mats, divans, and mattresses (Briggs 1974:146). Beds consisted of mattresses, which were stored away in the daytime. The storage place for mattresses, blankets, and pillows was a large deep arch recess built into the wall; a curtain was used to cover this recess (Amiri and

Tamari 1989: 30), (Nimir, vol.2, 1975:307). Rogers described a room in the women's quarter (*harim*), which she visited in Bethlehem in 1855:

The Room in which we sat was simply furnished; it was nearly square- the floor was of stone, and the walls were white washed; on a broad high shelf running round three sides of it, many articles of native crockery and earthenware, drinking- cups, jars, lamps, & c. were ranged. A mat of reeds, a carpet about as large as a hearth- rug, and several pillows or cushions were on the floor; a large red box with brass hinges and ornament, served as the wardrobe of the family..... in a deep arched recess, opposite to the door, a number of mattresses and wadded quilts were neatly piled up. (Rogers 1989: 46- 47)

Al Shahi (1984: 31) remarked that one aspect of most traditional Arab houses is the lack of personal or interior artistic expression, therefore house design, furniture and decoration tend to be uniform or very similar. This could be due to the fact that traditional houses were mainly built according to general universal norms accepted by the people, as these houses were developed by them to a stage of acceptance and general satisfaction. Thus similar exteriors and interiors were adopted by people without being conscious of individual self expression. In traditional settings everyone is engaged in shaping the environment, thus in design, the image is clear and shared, and everyone accepts one form (Rapoport, 1976: 22,23)

2.2.6. The Traditional Houses as a Climate Modifier

The traditional builder of the courtyard house was keen to create convenient environmental conditions inside each individual house within the city (Noor, 1984: 62). One of the distinctive characteristics of traditional cities in Palestine was the ability of inhabitants to provide themselves with comfortable climatic conditions inside their homes.

There was always a need to provide cool conditions inside traditional houses during hot summers, however no problem existed in winter, as no severe cold prevailed. The courtyard, which was the central element of house design, played an essential role in providing convenient climatic conditions for the house during summer. It acted as a temperature modifier for domestic spaces gathered around.

The courtyard, protected by walls or surrounding *iwans*, loggias and galleries was in the shade and kept cool during the greater part of the day. It created comfortable micro-climatic conditions inside the house. Rooms and interior spaces of the house were kept cool as they were protected from direct sun by the shaded courtyard and by their thick walls, and vaulted or domed roofs. The courtyard with its cool air, encourages heat exchange between inside spaces (Dunham 1960: 666); during daytime cool air from the courtyard moves inside to replace the air of rooms around the court. During the night the house was ventilated and cooled by convection currents when hot air rises from interior spaces and cool air sinks into the courtyard (Petherbridge 1978: 199).

The inner courtyard serve both as light-wells, in a building type that restricts exterior window area, and as air- wells into which the cool dense night air sinks. (Petherbridge 1978: 199)

To increase the comfortable conditions of the courtyard fountains were used with vegetation (Danby 1973: 69). Evaporation of water and the presence of plants help to raise the humidity and cool the air of the courtyard. Evergreen citrus fruit trees were commonly planted inside courtyards in Palestine; one or two trees, a small water fountain, and pots of flowering plants gave private courtyards cool and pleasant atmospheres.

The size of the courtyard was strictly limited to give protection from the sun and sufficient shading, therefore when the area of the house increased the courtyard size was kept within certain proportions; two or more courtyards were provided for larger houses (Dunham 1960:660).

Therefore, the courtyard was an area with controlled micro- climates, and the primary source for daylight and ventilation for the house (Petherbridge, 1978: 199). It represents the common living space, as it provides space for outdoor activities protected from wind, dust, and direct sun. Large openings of the house were oriented towards the courtyard, thus they received a controlled quantity of sun and natural light, while smaller windows were directed to the outside (Petherbridge, 1978: 199).

Traditional Palestinian cities composed of courtyard houses clustered in a compact and dense structure. The compactness provided thermal protection to individual houses by

reducing the wall area exposed to sun to the minimum (Dunham 1960: 660). Open spaces in traditional cities were reserved for narrow streets, private courtyards, and gardens.

2.2.7. Traditional Building Materials and Construction

The traditional building material of Palestine is mainly lime stone, which proved to be strong and durable. It has a white to yellowish, greyish colour. The availability of stone quarries in different regions of Palestine and the long tradition of building with stone made it the most commonly used building material. Skilful stone cutters and master builders with extensive experience in building with stone were available in Palestine.

Stone was used in the construction of the load bearing walls, which were massive, with a thickness of up to one meter. Thick stone walls were needed to support the heavy stone vaulted and domed roofs. Walls comprised of an outer and an inner layer of stone, with the space in between filled with mortar and stone rubble (Amiri & Tamari, 1989: 26).

Openings of windows and doors were kept to the minimum in width and were crowned by arches; care was taken, especially in carving the corner stones of the building, and the stones used for windows' and doors' edges. Walls, arches, domes, cross vaults and barrel vaults were all constructed of stone (Fethi and Rifai 1993:14).

Stone was also used in paving streets, private courtyards, and the floors of different rooms inside houses. Walls used to have a thickness of 80-120 cm in order to support the weight of the roof and withstand the thrust of the vault.

2.2.8. Social Aspects of the Traditional Palestinian House

As was mentioned before, the traditional Palestinian courtyard house was constructed as part of a dense urban fabric that constitutes the traditional cities of Palestine. Although houses were built adjacent and overlapped, family privacy was respected for each and every house. Morris (1993: 389) argued that the requirements of privacy in these domestic environments was essential in determining the urban form of the quarter.

Privacy is defined as the establishment of the right relationship with those who live nearby (Lawrence, 1987:163). In principle, privacy was considered in the overall layout of traditional cities of Palestine, which was based on a hierarchical order of separation of functions relative to level of privacy. The main commercial area with the principal mosque was a public domain, from which privacy gradually increases towards the private house.

The introverted scheme, upon which the design of the courtyard house was based, ensured the ultimate privacy for occupants. Large windows were directed towards the court, while street elevations of private houses were designed with small openings; windows were placed above the line of vision of passers-by (Petherbridge, 1978:197). Direct visual access to other windows, terraces, or courtyards of opposite houses were carefully considered and avoided (Hakim, 1986). The entrance of the house was designed to allow no direct visual access to the house, thus a bent or blind entrance guaranteed an indirect approach, and privacy for the house.

The house layout as a whole was designed with full separation between spaces used by men and male visitors on the one hand and spaces used by women or close family members on the other. The separation was achieved in two ways. Firstly, by using different levels. The ground floor is considered less private than the floors above, and privacy increases by proceeding upwards. Secondly, if the house was built on just on one level, privacy was assured by the use of separating architectural elements of passages, courts and galleries.

The transition between male and female quarters was experienced by Rogers when she moved from the reception hall to the women's quarter in one of the houses in Arabeh, a small town in northern Palestine in 1855:

They carefully led me over terraced roof, through courts and halls and passages, till we reached the female quarter. (Rogers 1989: 218)

Cannan (1933: 52) argued that in the Palestinian house, several rooms in the same storey often differ in height and floor-level, and that one or more steps between rooms were

needed. He explained that the main objective of the builder was to make certain that every set of rooms are as private and secure as possible (Cannan, 1933: 52).

Al- Shahi (1984: 26) remarked that separation within the house layout between spaces used by men and women is deep- rooted in the social values of the Arabs. Such values entails that women's quarters are private and accessible only to women and to close male relatives.

While the social and cultural values of Palestinians highly respected the family privacy, they also stressed the importance of hospitality. Thus the Palestinian house had to allow for these two contrasting concepts of social life. While privacy necessitates withdrawal from public life, hospitality required indulgence in social activities, as well as keeping ones' house open welcoming visitors and celebrating different occasions. Noor explained:

Arab hospitality and social customs require large spaces for meeting and entertaining. On the other hand religious demands require privacy and calm. Therefore the house has to accommodate these two contradictions. (Noor, 1984: 61)

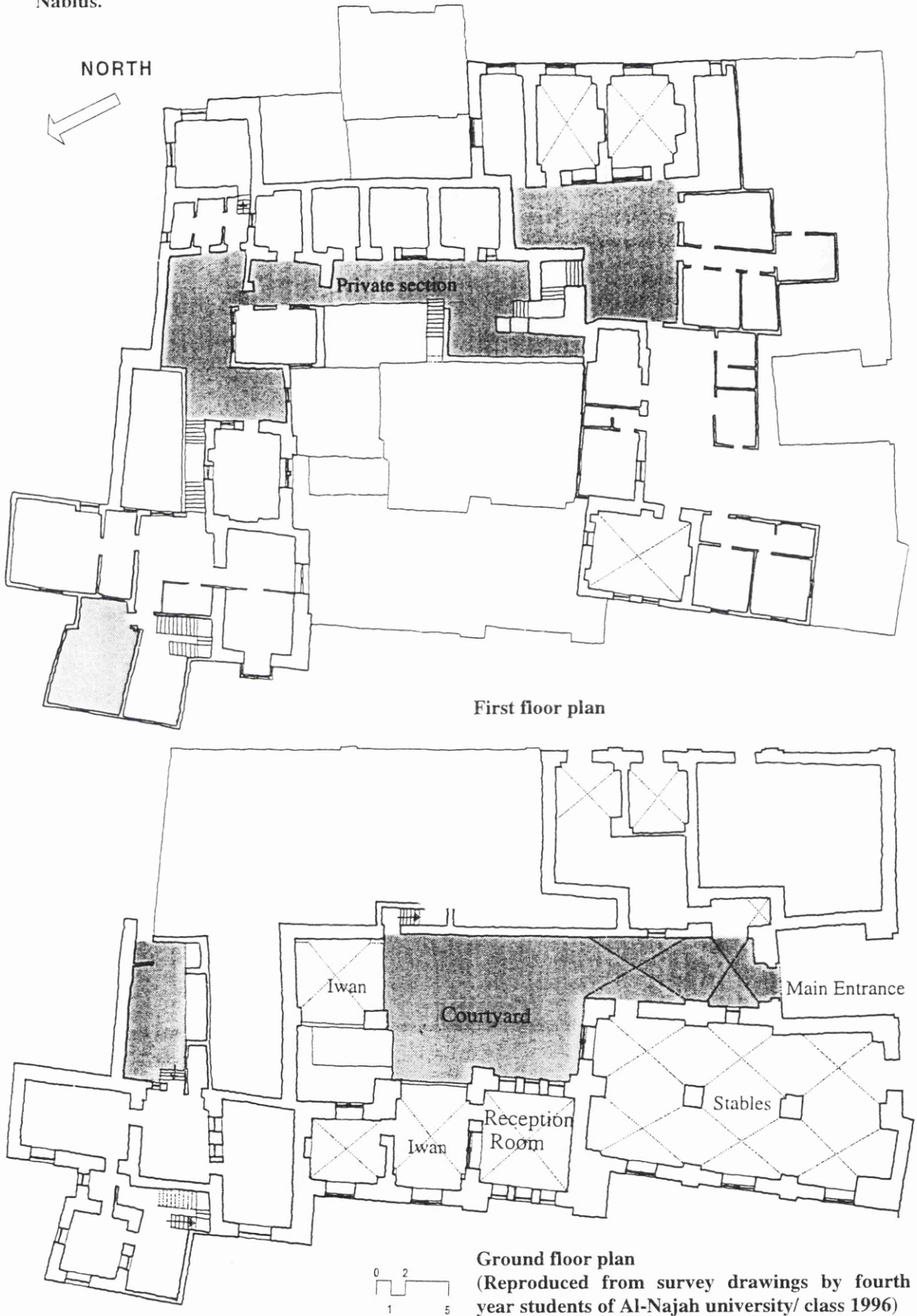
Allocation of certain spaces within the house layout for men and male guests (*Diwan*, *Majlis*) with facilities for service, separate from the women's quarter satisfy the requirements for both family privacy and hospitality (Al-Shahi, 1984: 30).

The traditional Palestinian house used to accommodate the extended family where two or three generations of the same family tend to live in the same house (the family house). The large family was a source of power and prestige, particularly the male members who perpetuate the family descent line (Al-Shahi, 1984:27).

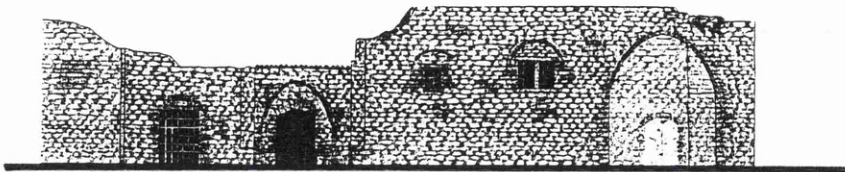
In the same quarter within the Palestinian city, houses of the same family and close relatives used to be built clustered and adjacent to each other for protection and power.

A visual summary of the architectural features of courtyard houses in Nablus/ Palestine in terms of plan layout, elevation, section, and courtyard elements is provided by figure 2.3 and plates 2.1, 2.2, 2.3, and 2.4

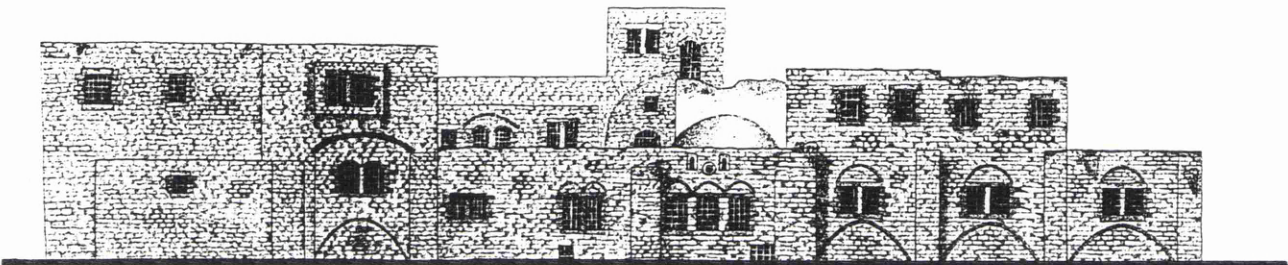
Figure 2.3. Example of the courtyard house in Palestine. Al-Nimir family house inside the old city of Nablus.



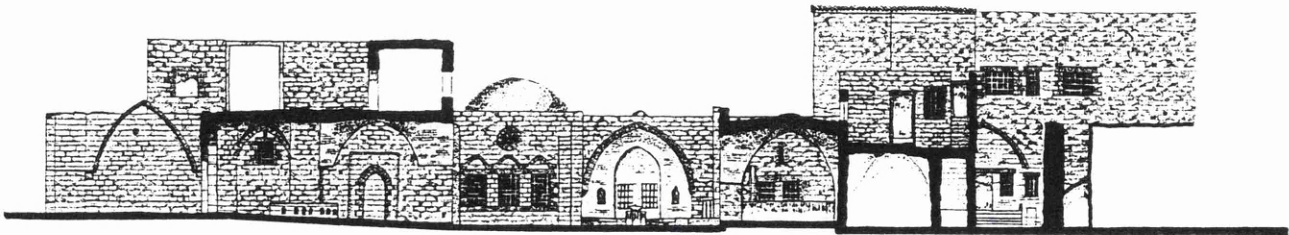
Al- Nimir house: elevations



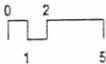
Street elevation



Garden elevation



Section A-A through the main entrance and the central court.
Drawings were prepared by Al-Najah fourth year students / class 1996



Digital images of various courtyard houses in Old Nablus (scanned from photographs using a laser scanner)

Plate 2.1: The entrance door opens into a courtyard with adjacent stables.



Plate 2.2: The entrance to the al-Nimir family house (figure 2.3), a transition element from public to private space.

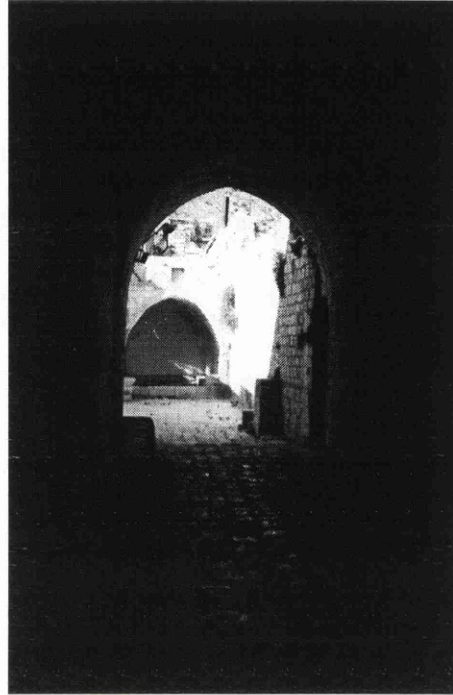


Plate 2.3: The “Iwan” in the Al-Nimir family house (figure 2.3).

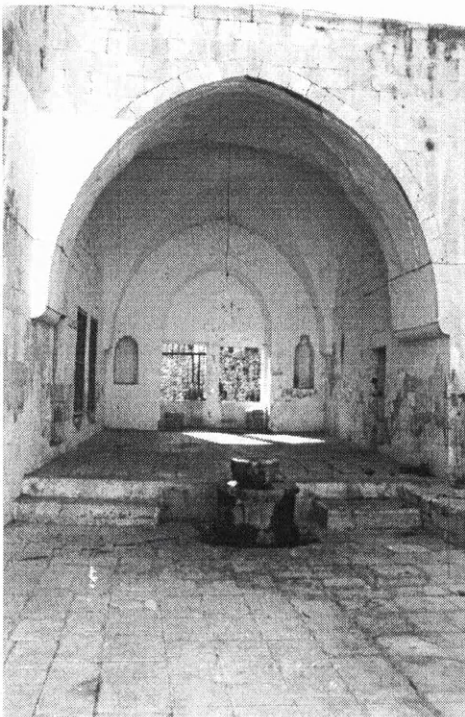
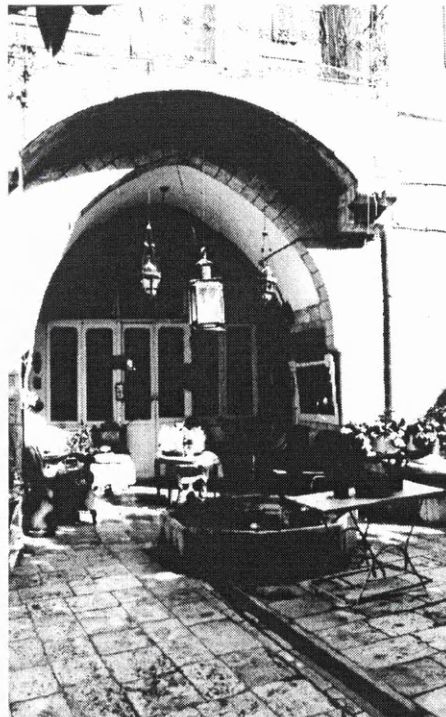


Plate 2.4: Courtyard with fountain, potted plants, and outside living space.



2.3. THE COLONIAL HOUSE (COVERED CENTRAL- HALL)

The central- hall house typology has evolved in Palestine during the period of the British mandate (1918-1948). Fethi and Refai (1993:8) argued that the central-hall villa type appeared in the Arab world as a result of western influence; it developed first in Lebanon, and then it found its way into Syria, Jordan and Palestine during the 1920s.

New planning regulations were introduced during that time, which allowed for old cities to expand outside their walls (Nimir, vol.3, 1975:65). New roads were constructed for cars and new residential quarters were established. Zoning of cities allotted residential areas, in which land was divided into building plots (for example in Nablus city the average area for a building plot was 750m²). Building within these lots necessitates certain withdrawal of building lines from the four sides to allow for setbacks.

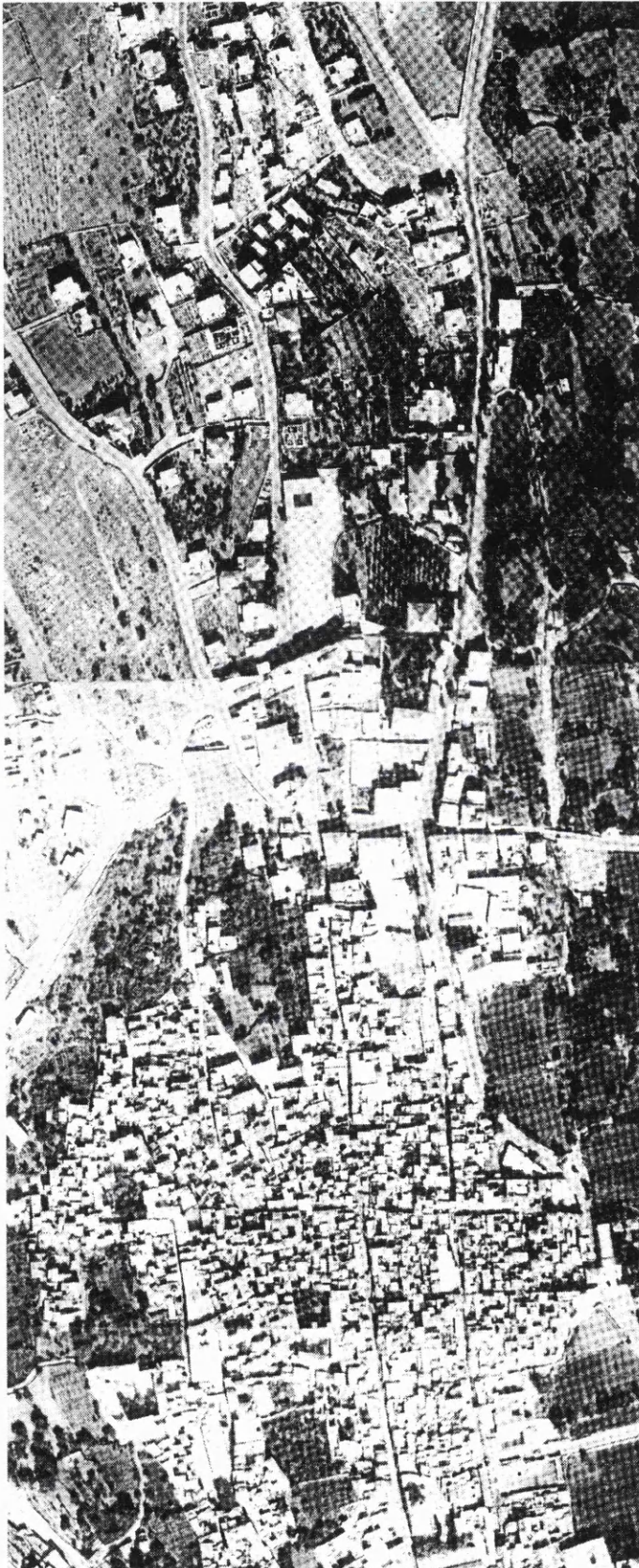
By authorising the division of building plots and the setbacks, the way was paved for the extroverted house type to develop and replace the introverted traditional courtyard house type. Thus the dense and compact urban fabric of old cities was substituted by a dispersed and scattered type of urban structure (plate 2.5).

Schaflitzel (1980: 33) described the influence of colonisation on the growth of old cities in Tunisia, and argued that colonisation introduced new urban planning schemes, according to which, new cities were constructed outside the walls of old cities. The addition of European towns resulted in a dual planning system and the decay of old cities.

2.3.1. Main Characteristics

Basically, what distinguishes the central-hall house typology is firstly, its extroverted layout scheme designed with maximum openness to the outside. Secondly, the central hall, around which rooms are grouped, and through which they are directly accessible. Thirdly, the wealth of decoration of the outside facades that demonstrate the foreign influence on the local architecture. Fourthly, the introduction, in the later period, of a flat roofing system using I beams. During the early period vaulting systems were used for roofing.

Plate 2.5: Digital image of an aerial photo of a section of Nablus in 1944. It shows part of the compact old city and a section of dispersed new housing outside the old city (scanned from a photograph using a laser scanner)



The villa type housing development outside the old city; dispersed, low density urban growth.

The dense, compact, high density urban fabric of the old city formed of clustered courtyard houses.

The thickness of walls, however, was reduced by the use of flat lighter roofs. Cannan (1933: 3) stated that the use of new construction techniques and the use of reinforced concrete enabled a reduction in wall thickness in the upper stories of the house to 23 cm, the minimum allowed by regulations in 1933 in Palestine.

2.3.2. Layout

The central -hall house type is basically a development of the central- courtyard type, i.e. the open courtyard was covered and transformed itself into the central hall, which proved to be climatically more convenient, and socially formed a common meeting space for the family (Fethi & Rifai, 1993:7).

Cannan (1933: 39,40) described the urban house which was dominant during the thirties in Palestine. He stated that the house layout had a characteristic arrangement of rooms on both sides of a hall (*liwan*), which is as deep as the whole building and used as a sitting room, while the other rooms were used as living rooms. This could indicate that within the layout of central-hall houses allotment of specific functions to rooms was not adopted giving higher flexibility of use to rooms, i.e. living rooms could be used as bedrooms, living, or dining space.

He also remarked that the hall used to have windows on both sides (the side with the main door and the rear side). In some cases, he added, the hall opened on to a courtyard, but not always. This could imply that in the process of change of house layout from the courtyard to the hall type, some house examples accommodated both design features in their plans.

Fethi and Refai (1993) remarked that the central-hall layout entails a tripartite division in the overall spatial arrangement of the plan, and this in turn leads to a symmetrical configuration. They added that the special disposition of these layouts requires approximately 10 to 12 meters depth in order to facilitate division of space.

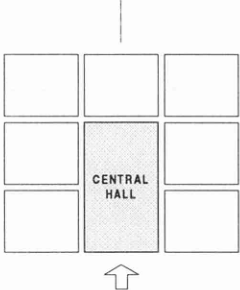
Among twenty examples of houses surveyed in Nablus (Palestine) different arrangements of rooms were found around the central hall. Figure 2.4 attempts to

provide 4 conceptual scenarios with which most type B houses can be identified. Detailed percentages are provided with the figure.

Figure 2.4 : Diagrams showing different configurations of central hall houses in Nablus (Palestine).

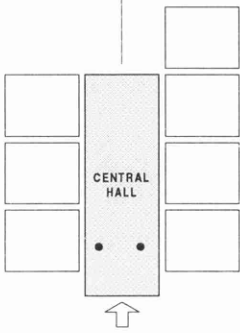
Central hall is surrounded by rooms on three sides, while the fourth side of the hall comprises the house entrance.
Room arrangement is symmetrical along both sides of the hall.

40% of the sample surveyed
Figure 4, Appendix 3B



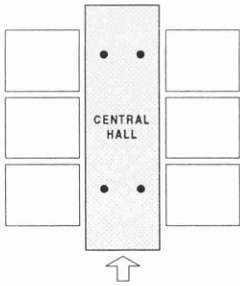
Central hall extends the depth of the house in the front elevation on the first floor allowing extra space to allocate the entrance on the ground floor. Room arrangement expands beyond the hall on one side of the house plan.
Asymmetrical room arrangement on both sides of the hall

30% of the sample surveyed.
Figure 2, Appendix 3B



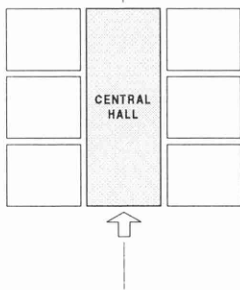
Central hall extends the depth of the house on both sides. This is adopted on the first floor while on the ground floor, the extension space is used as an entrance for the house, and the rear extension adds to the hall space and forms an exit to outside garden. The layout is symmetrical along and across the hall.

20% of the sample
Figure 2.5
Figure 1, Appendix 3B



The layout is simple, the central hall expands the exact whole depth of the plan forming an entrance in the front elevation and large windows combined with an exit door for outdoor space or garden in the rear elevation.
The plan is symmetrical along and across the hall.

10% of the sample surveyed
Figure 3, Appendix 3B



2.3.3. Exterior Design

The extroverted design concept adopted in the central-hall house exposed its four elevations to the outside. In contrast with the introverted courtyard house, the central-hall house necessitates focus on the design of its exteriors. The central-hall house is characterised by its simple clear cut form, where the four facades read well, as elevations of this type of house are derived from the internal arrangements of rooms (Ragette, 1974:109,110).

A recurrent feature among the central-hall house type is the treble arch motif used to emphasise the central-hall in elevation, and usually appears dominant within a symmetrically designed facade. The treble arch is mainly composed of a door in the middle and a window on each side; it generally has a balcony with an iron railing . Window frames are usually wooden, while wrought- iron grills are used for protection.

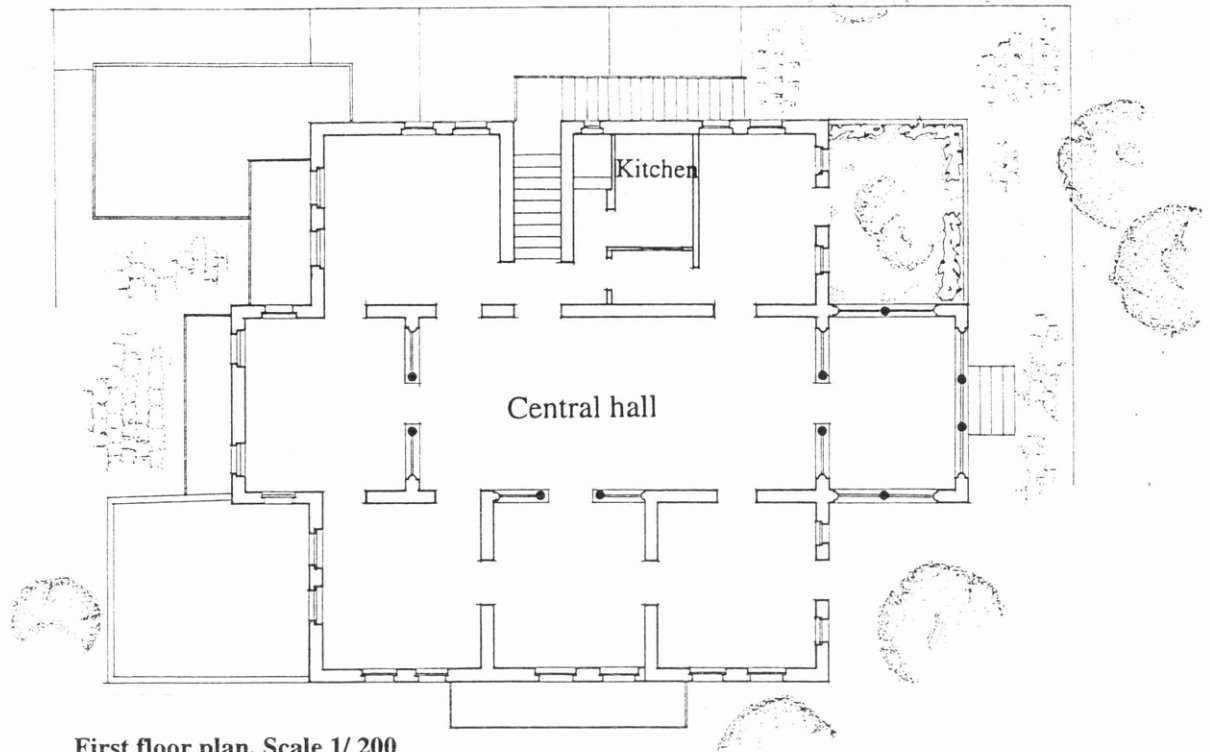
Smooth finish lime stone was commonly used for construction of the central-hall house. Within its four articulated facades, windows were prominent, through their consistency, size, and proportion between solid and void. Stone surrounding openings usually projected by a few centimetres, accentuating these elements and giving them prominence within the elevation. The corners of the house are in most of the cases emphasised by expressing quoins at the corner (Ragette, 1974: 110).

The entrance, which is usually on one side of the central hall is a principal facade feature among the central-hall house type. Generally it is neatly decorated with different motifs mainly inspired by classical architecture. Thus they plainly reflect the western influence upon this house typology.

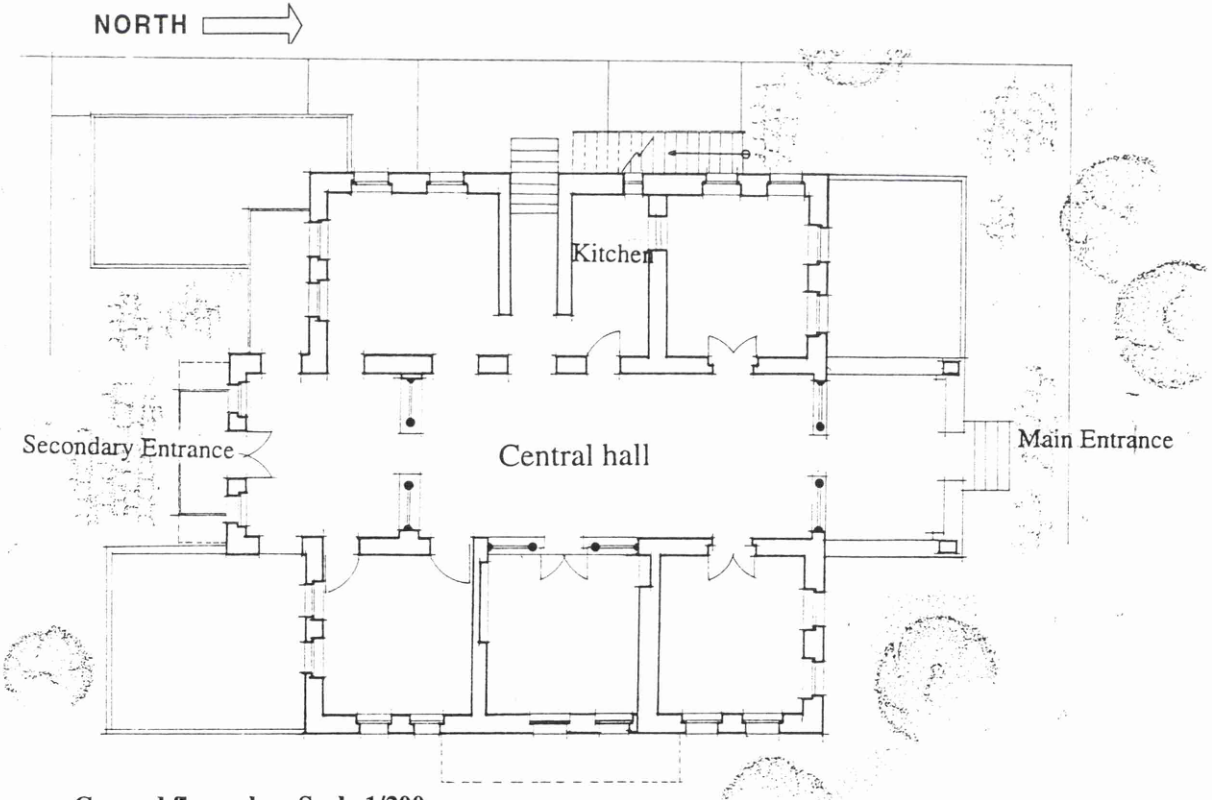
The central-hall type is usually built on one or two levels, however the two level house is more prominent. Also, the red tile pitched roof was in some cases used, although more simple flat roofs are found.

Figure 2.5 and plates 2.6, 2.7, 2.8, 2.9, 2.10, 2.11 provide a visual summary of the architectural features of central- hall houses in Palestine in terms of plan layout, elevation, and decorative motifs.

Figure 2.5: Example of the colonial central-hall house in Palestine. A house in Nablus

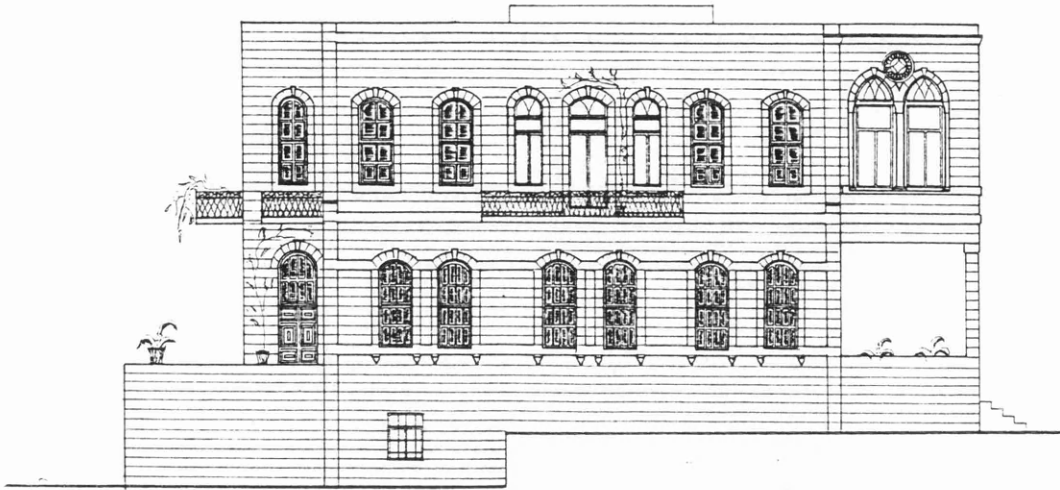


First floor plan. Scale 1/ 200

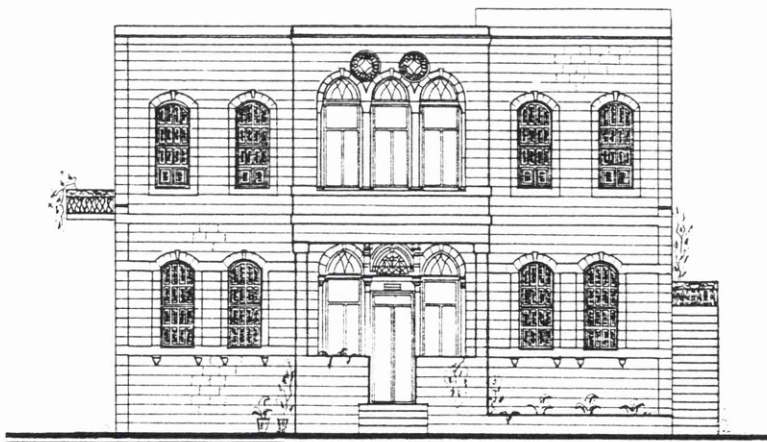


Ground floor plan. Scale 1/200

Drawn by fourth year students, class 1997 Al- Najah university/ Nablus.



Western elevation



Southern elevation
Drawn by class 1997, Al- Najah university/ Nablus.

Digital images of various colonial (covered central -hall) houses in Nablus (scanned from photographs using a laser scanner)

Plate 2.6: Entrance door in a colonial house

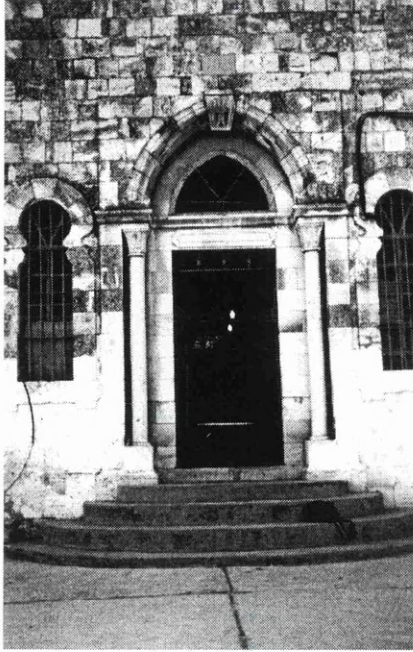


Plate 2.7: Entrance door in a colonial house

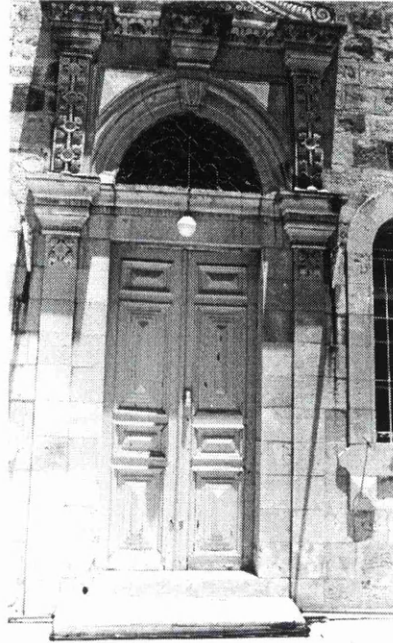


Plate 2.8: Decorative motifs



Plate 2.9: Three arch motifs of front elevation



Plate 2.10: Three arch motive

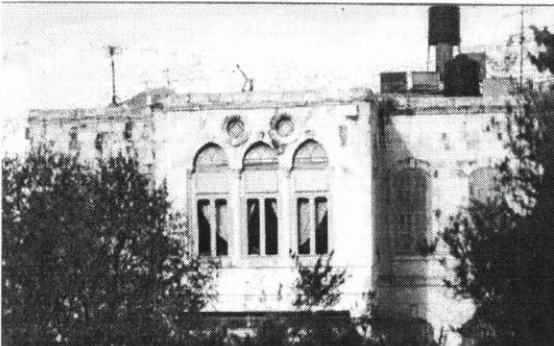
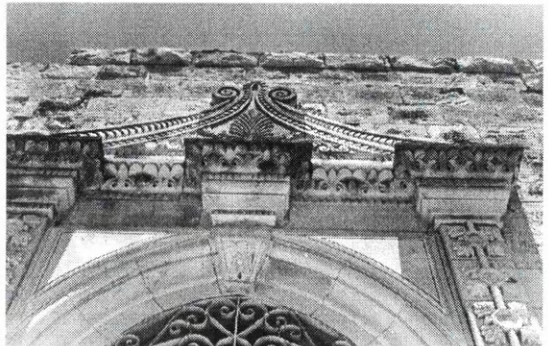


Plate 2.11: Details above entrance door



2.4. THE MODERN HOUSE IN PALESTINE

The new, modern house began to appear in Palestine during the fifties, concomitant with the emergence of the professional architect designer. Houses built during that time were, and still are until now, designed according to international trends in architecture.

2.4.1. Main Characteristics

The main characteristic which can clearly distinguish the modern house from the other two types, i.e. the courtyard and the central-hall house types, is the involvement of the architect, as an educated professional, in house design and construction, while the other two types of houses were planned and executed by master builders and users.

The architect involvement in the design of new houses introduced users to the consultation of the professional designer who is expected to be capable of translating their requirements efficiently into functional solutions that could be applied to their houses.

In the design of new houses, the architect usually adopts design solutions that serve the purposes of his/ her particular client and are applicable to the specific site available from the client-owner. Again, residential areas within cities of Palestine are divided into building plots; however, planning regulations there demand setbacks (specified withdrawal distance from the plot's boundaries). Therefore, the area left in the centre of the plot is the piece of land allowed to be built upon, and within that area, architects usually try to make the best of the building site according to the finance available. A garden generally surrounds the house in the space left for setbacks.

2.4.2. Layout

Essentially, the modern house is designed according to an extroverted layout scheme, therefore it opens to the outside. The layout of the modern house is usually composed of spaces (rooms) linked with corridors and lobbies, all spaces however have windows to the outside. In general, the architect tries to utilise the potential of the site available, as well as satisfying the requirements of the client- user.

Rooms within the house layout are usually allotted specific functions dictated by the client's specific requirements. Thus rooms size and location, relative to house layout, are determined by these functions.

The modern house layout could take any composition. Thus rooms could be arranged in any configuration, justified by the architect, to serve the purpose of his client, who usually specifies his/her requirements in terms of functions, and preferred functional relationships between house spaces. The architect usually tries (relative to his own ability) to achieve the most convenient layout composition for the house that includes different functions required by the client (with acceptable relationships).

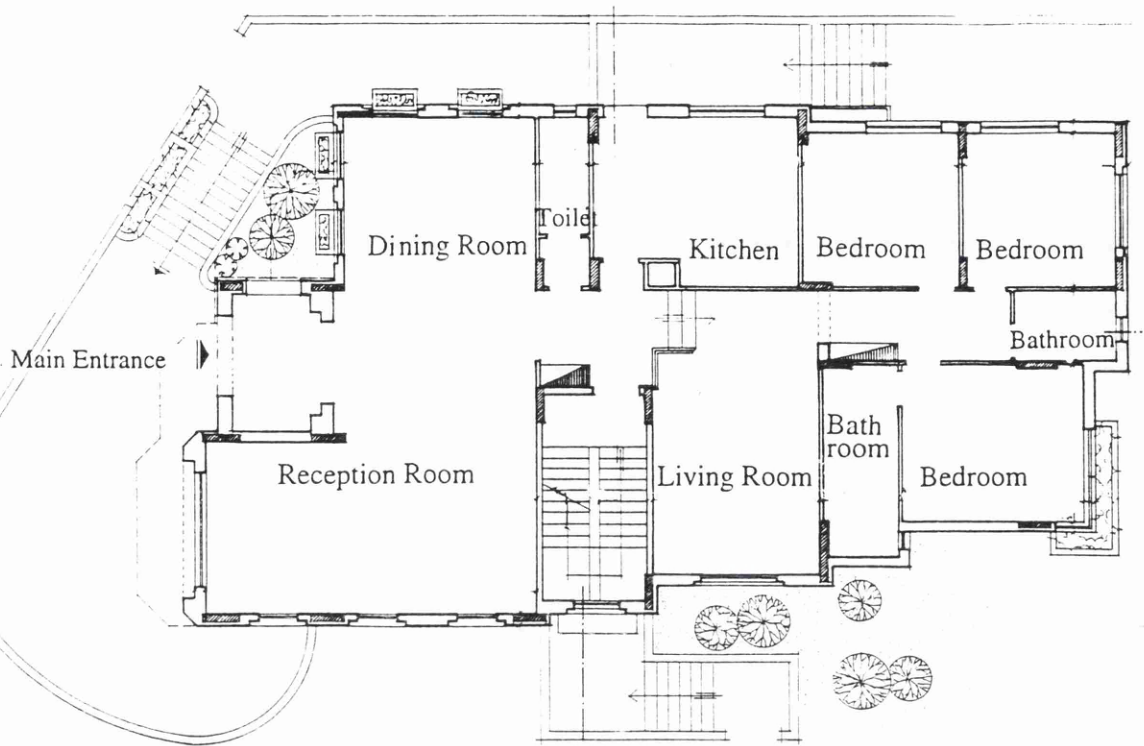
2.4.3. Exterior Design

Using lime stone as the main building material in Palestine, elevations can usually be, simple or complicated according to the architect's design. In most cases different architectural trends are adopted in the design of house elevations. Finance could be an important factor that determines the extent of elaboration of details the architect can adopt in designing the house facades.

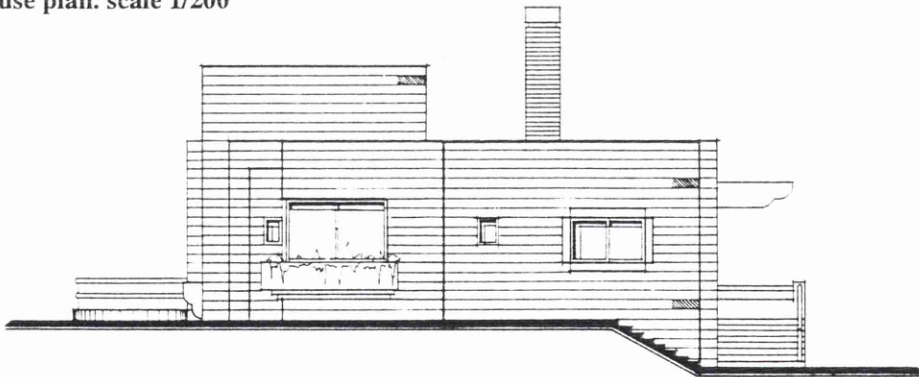
Openings are usually rectangular and of different dimensions relative to rooms size and the elevation's composition.

Figure 2.6 and plates 2.12- 2.19 provide a visual summary of the architectural features of the modern house in Palestine in terms of plan layout, elevation, and exterior image

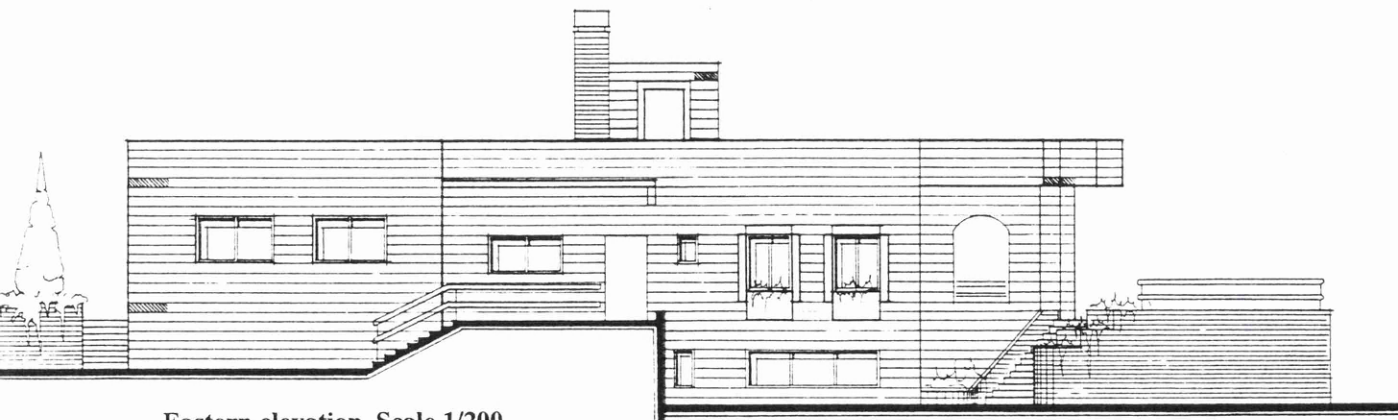
Figure 2.6: Example of the modern house in Nablus/ Palestine.



House plan. scale 1/200



Southern elevation. Scale 1/200



Eastern elevation. Scale 1/200

Plate 2.12- 2.19: Digital images of various modern houses in Nablus (scanned from photographs using a laser scanner)

Plate 2.12

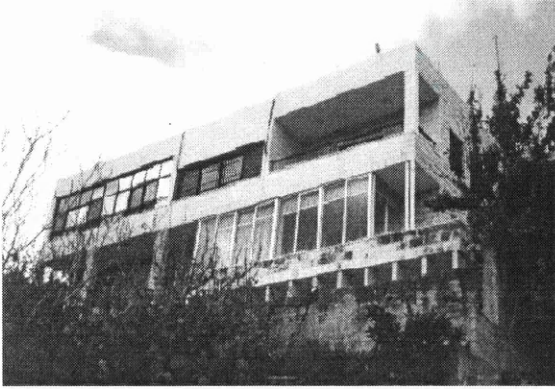


Plate 2.13



Plate 2.14



Plate 2.15



Plate 2.16



Plate 2.17



Plate 2.18



Plate 2.19



2.5. COMPARATIVE ANALYSIS OF THE THREE HOUSE TYPOLOGIES

As a result of reviewing the main characteristics, features, and specific elements of design among the three house typologies identified in Palestine by this study, comparisons in terms of context, interior space, house layout, and exterior facades are made. Tables 2.1, 2.2, 2.3, 2.4 highlight the results.

2.1: Comparison between the urban context of the three types of houses.

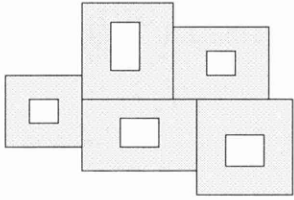

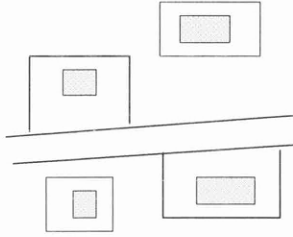
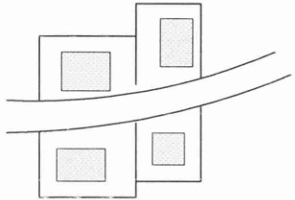
Urban Context	Type A house The courtyard house	Type B house The central-hall house	Type C house The modern house
 <div>House </div>			
The urban structure	<ul style="list-style-type: none">■ Compact■ Very dense	<ul style="list-style-type: none">■ Dispersed■ Very low in density	<ul style="list-style-type: none">■ Dispersed■ Low in density
Relationship to other houses	<ul style="list-style-type: none">■ Attached■ Overlapped	<ul style="list-style-type: none">■ Independent, villa type	<ul style="list-style-type: none">■ Independent, villa type
Garden	<ul style="list-style-type: none">■ courtyard, private gardens for large houses and palaces	<ul style="list-style-type: none">■ Garden surrounding the house	<ul style="list-style-type: none">■ Garden within setbacks around the house

Table 2.2: Comparisons between the interior space of the three house types

Interior space	Type A house The courtyard house	Type B house The central-hall house	Type C house The new modern house
ceiling	<ul style="list-style-type: none"> ■ High or low ■ Vaulted, domed 	<ul style="list-style-type: none"> ■ High (more than 4.5 meters) ■ Vaulted ■ Flat, Iron beams 	<ul style="list-style-type: none"> ■ Convenient height (3.5-3.75 meters) ■ Flat
Floor	<ul style="list-style-type: none"> ■ Stone tile floor 	<ul style="list-style-type: none"> ■ Tiles 	<ul style="list-style-type: none"> ■ Tiles
Wall details	<ul style="list-style-type: none"> ■ Wall cupboards (recess in walls) ■ Window seats ■ Niches 	<ul style="list-style-type: none"> ■ Wall cupboards (recess in walls) ■ Window seats 	<ul style="list-style-type: none"> ■ Plain simple walls
Wall thickness	<ul style="list-style-type: none"> ■ 90-120 cm 	<ul style="list-style-type: none"> ■ 90-100 with vaulted roofs ■ minimum of 23 cm with flat roofs 	<ul style="list-style-type: none"> ■ 20 cm
Rooms	<ul style="list-style-type: none"> ■ Range 1-10 ■ Mode 3 rooms 	<ul style="list-style-type: none"> ■ Range 1-11 ■ Mode 4 rooms 	<ul style="list-style-type: none"> ■ Range 3-15 ■ Mode 7 rooms

Table 2.3: Comparison between the layout of the three house types developed in Palestine.

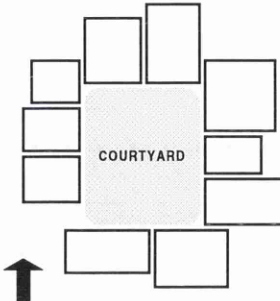
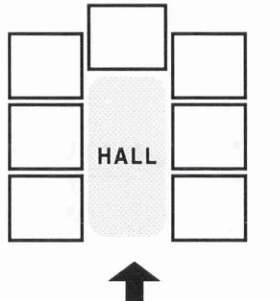
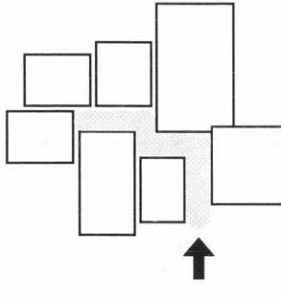
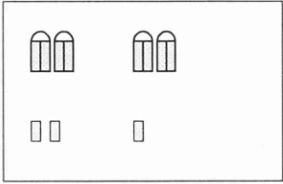
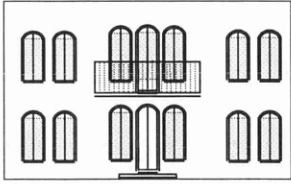
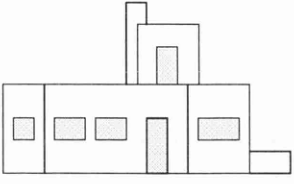
LAY-OUT	Type A house The courtyard house 	Type B house The central-hall house 	Type C house The new modern house 
Plan lay-out	<ul style="list-style-type: none"> ■ Introverted ■ Small and large rooms clustered around a central enclosed open to sky courtyard 	<ul style="list-style-type: none"> ■ Extroverted ■ Rooms of similar size arranged around a central hall 	<ul style="list-style-type: none"> ■ Extroverted ■ Different arrangements and sizes of spaces according to relationships between functions
Plan composition	<ul style="list-style-type: none"> ■ Asymmetrical 	<ul style="list-style-type: none"> ■ Usually Symmetrical and balanced along one axis 	<ul style="list-style-type: none"> ■ Asymmetrical
Functional Relationships	<ul style="list-style-type: none"> ■ Each room has direct relationship with the courtyard 	<ul style="list-style-type: none"> ■ each room has direct relationship with the central hall 	<ul style="list-style-type: none"> ■ Direct relationships between spaces or indirect via corridors or lobbies
Inside- outside relationship between rooms and circulation space	<ul style="list-style-type: none"> ■ Each room has direct relationship with the courtyard (controlled exterior space) ■ weak, indirect relationship with the outside surroundings 	<ul style="list-style-type: none"> ■ Strong, direct relationship with the outside (surroundings) 	<ul style="list-style-type: none"> ■ Strong, direct relationship with the outside (surroundings)
Circulation	<ul style="list-style-type: none"> ■ Around courtyard ■ Through courtyard 	<ul style="list-style-type: none"> ■ Around central hall ■ Through central hall 	<ul style="list-style-type: none"> ■ Direct circulation using corridors and lobbies
Entrance	<ul style="list-style-type: none"> ■ Indirect ■ Buffer zone between public and private (street and the house) 	<ul style="list-style-type: none"> ■ Direct from outside Located at one elevation of the central hall 	<ul style="list-style-type: none"> ■ Direct from outside
Social aspect of design	<ul style="list-style-type: none"> ■ Very strict separation between spaces used by males and females 	<ul style="list-style-type: none"> ■ No strict separation between sexes 	<ul style="list-style-type: none"> ■ No strict separation between sexes

Table 2.4: Comparison between street facade(s) of the three house types

Facades	Type A house The courtyard house	Type B house The central-hall house	Type C house The new modern house
			
Composition	<ul style="list-style-type: none"> ■ Unbalanced ■ Asymmetrical 	<ul style="list-style-type: none"> ■ Balanced ■ Symmetrical 	<ul style="list-style-type: none"> ■ Balanced ■ Asymmetrical
Windows orientation	<ul style="list-style-type: none"> ■ Large windows oriented towards the courtyard ■ Small windows oriented towards the outside (street) 	<ul style="list-style-type: none"> ■ Windows oriented to the outside 	<ul style="list-style-type: none"> ■ Windows oriented to the outside
Windows shape	<ul style="list-style-type: none"> ■ Rectangular shape ■ Arched shape ■ Narrow ■ Vertical 	<ul style="list-style-type: none"> ■ Arch shape ■ Rectangular ■ Vertical 	<ul style="list-style-type: none"> ■ Rectangular shape ■ Mostly horizontal
Windows size	<ul style="list-style-type: none"> ■ Small to the outside ■ Large towards the court ■ Outside windows 60 X 90 cm 90 X 150cm 	<ul style="list-style-type: none"> ■ Large ■ 100 X 250cm 120 X 250cm 	<ul style="list-style-type: none"> ■ large ■ 200 X 150 250 X 150 300 X 150
Proportion of solids to voids	<ul style="list-style-type: none"> ■ More solid than void 	<ul style="list-style-type: none"> ■ Void increased ■ Windows are dominant in facade 	<ul style="list-style-type: none"> ■ Relative balance between solid and void
Material of window frames	<ul style="list-style-type: none"> ■ Iron ■ wood 	<ul style="list-style-type: none"> ■ Mostly wood 	<ul style="list-style-type: none"> ■ Aluminum
Construction materials	<ul style="list-style-type: none"> ■ Lime stone 	<ul style="list-style-type: none"> ■ Lime stone 	<ul style="list-style-type: none"> ■ Lime stone
Details	<ul style="list-style-type: none"> ■ Very simple ■ no decoration ■ Plain walls 	<ul style="list-style-type: none"> ■ Rich in details 	<ul style="list-style-type: none"> ■ Simple
Height	<ul style="list-style-type: none"> ■ Two to three levels 	<ul style="list-style-type: none"> ■ One level or two 	<ul style="list-style-type: none"> ■ One to two levels
Entrance	<ul style="list-style-type: none"> ■ Dominant in elevation, decorated, monumental 	<ul style="list-style-type: none"> ■ Emphasised by decoration ■ Important element in house facade 	<ul style="list-style-type: none"> ■ Designed as part of the house street elevation

2.6. CONCLUSIONS

Investigation of Palestinian house development highlighted the main characteristics of each house typology which has evolved there over time, and facilitated comparisons between the three house types identified.

Several important points were identified by reviewing literature related to each of the three house types. The traditional courtyard house evolved pre the beginning of the twentieth century, the central-hall developed during the British mandate in Palestine (1918-1948) and the modern house started to appear during the fifties. A summary of the main issues that featured in this chapter is highlighted below :

1. The formation of the traditional Palestinian courtyard house was the outcome of various forces. It was a genuine expression of people's attitudes towards their environment, and the artefact that materialised in harmony with their values, beliefs, and wishes. Through the evolution of traditional house design, economical, energy efficient, and socially acceptable solutions were developed to provide convenient living environments.
2. The traditional house has been developed through the ages to a state of general acceptance and satisfaction of people. The sudden change from the introverted to the extroverted concept of design ignored centuries of house development achieved by trial and error, while no attention was given for an objective assessment of the traditional house type. Transformation was sudden, and abrupt.
3. The adoption of the extroverted western villa-house type (the central-hall house) was first introduced by the Arab bourgeoisie merchants, bankers, top politicians, and civil servants. Therefore they played a key role in promoting new tastes and architectural styles (Fethi & Refai, 1993:8).
4. The central-hall house, although possibly a development of the traditional courtyard house where the court was transformed into a covered hall, represents a new typology which introduced the extroverted house layout and altered the basic concept of the traditional dwelling (introverted scheme).
5. By tracing the development in Palestinian house design, it could be suggested that people as users (influenced by western architecture) were the first to contribute to

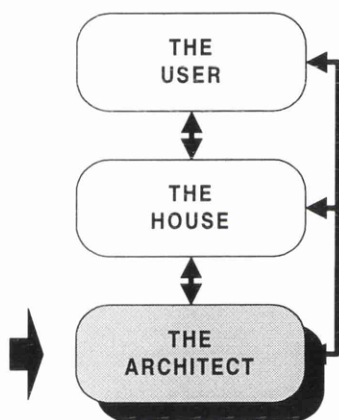
the adoption of the extroverted house layout in Palestine by encouraging the central-hall house to flourish. However, architects could have played the largest part in introducing new concepts of house design by the adoption of international trends in architecture in their design of the modern house.

6. Type C house is characterised by an extroverted layout composed of spaces (rooms) linked together by corridors and lobbies. It is distinguished from the other two types A and B by the involvement of the architect, as an educated professional in its design and construction. Architects are expected to translate the user's requirements into a functional design solution.

2.7. REFERENCES

- AL-AZZAWI, S.(1984): "The Courtyards of Oriental Houses in Baghdad: Non Functional Aspects", *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 53-59.
- AL-HATHLOUL,S. (1980): " Arban Forms in Arab- Muslim Cities", The international symposium on Islamic Architecture and Urbanism, January 5-10, 1980, Dammam, Saudi Arabia, *Ekstics*, Vol. 47, No. 280, pp.15-16.
- AL-SHAHI, A.(1984): " Welcome, My House is Yours: Values Related to the Arab House", *The Arabs House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 25-32.
- AMIRY, S., TAMARI,V. (1989): *The Palestinian Village House*, The British Museum, London.
- ANTONIOU, J.(1981): *Islamic Cities and Conservation*, The UNESCO Press, Geneva.
- BRIGGS, M. (1974): *Muhammadian Architecture in Egypt and Palestine*, Oxford University Press, London, Edinburgh, Glasgow, Copenhagen.
- CANAAN, T.(1933): " The Palestinian Arab House: Its Architecture and Folklore", *The Journal of the Palestinian Oriental Society*, Vol. XII, XIII, pp.223-247,1-83.
- CORREA, C. (1982): " Open to Sky Space: Architecture in Warm Climate", *Mimar*, No.5, July- September, pp.31-35.
- DANBY, M.(1973): " The Design of Building in Hot- Dry Climates and Internal Environment", in *Build International*, Applied Science Publishers Ltd, England.
- DUNHAM, D.(1960): " The Courtyard House as a Temperature Regulator", *The New Scientist*, 8 September, pp.633-666.
- FETHI, A & ROAF,S. (1984): " The Traditional House in Baghdad- Some Socio-Climatic Considerations", in *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp. 41-52.
- FETHI,I, A & RIFAI,T.(1993): "Traditional House in Amman: A Topological Study of Architecture of Early Houses of Amman, Jordan", *Symposium on Conservation of Architectural Heritage in Jordan and the Arab World*. 20-25 Nov., Amman, Jordan.
- GAZZARD, R.(1984): " The Arab House: Its Form and Spatial Distribution", in *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 15-24.
- HAKIM, B.S.(1986): *Arabic-Islamic Cities: Building and Planning Principles*, KPI Limited London, and Routledge & Kegan Paul plc, London and New York.
- HUGH, M. ROBERTS, P. (1979): *An Urban Profile of the Middle East*, Croom Helm, London.
- KOSTOF, S.(1992): *The City Assembled*, Thames and Hudson, London.
- LAWRENCE. R.J. (1987):*Housing Dwellings and Homes: Design Theory, Research and Practice*, John Wiley & Sons, Chicago, New York...etc.
- MICHELL, G.(1978): *Architecture of the Islamic World: Its History and Social Meaning*, Thames and Hudson, London, and William Morrow, New York.
- MORRIS, A.E.J.(1994): *History of Urban Form*, Longman Scientific & Technical, England.

- NIMIR,A. (1975): *The History of Nablus Mountain and the Balqa*, (in Arabic), vol.1-4, Nablus
- NOOR, M. (1984): “ The Function and Form of the Courtyard House”, in *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 61-71.
- PETHERBRIDGE,G.T.(1978): " Vernacular Architecture: The House and Society, in Mitchell ed., *Architecture of the Islamic World*, Thames and Hudson, London.
- RAGETTE, F.(1974): *Architecture of Lebanon: The Lebanese House During the 18th and 19th Centuries*, American University of Beirut, Lebanon.
- RAPOPORT,A. (1976): *The Mutual Understanding of People and their Built Environment*, Mouton Publishers, Paris.
- ROBINSON,F.(1982): *An Atlas of the Islamic World Since 1500*, Phaidon, Oxford, England.
- ROGERS,M.E.(1989): *Domestic Life in Palestine*, Kegan Paul International, London, New York.
- SCHAFLITZEL, U.(1980): “ The Renewal if an Islamic Medina”, The international symposium on Islamic Architecture and Urbanism, January 5-10, 1980, Dammam, Saudi Arabia, *Ekstics*, Vol. 47, No. 280, pp.33-35.
- YAGI, K. (1984): “ Traditional Houses and Living Patterns in Syria”, in A, Germen (ed.), *Islamic Architecture and Urbanism*, A symposium Organised by the Collage of Architecture and Planning, 5-10 January, Dammam, pp 343-362.



3. Chapter Three

**The Palestinian Architect:
Profile, Education and Practice**

3.1. INTRODUCTION

This chapter aims at studying the local Palestinian architect as a potential generator of change in house design in Palestine. Investigation will involve three areas of interest:

1. The architect's profile, which presents general information about Palestinian architects in the West-Bank.
2. The architect's education which will introduce a historical review of architectural education in general and education of Palestinian architects in particular. Also the influence of the architect's educational background on his attitudes towards traditional and new architecture will be discussed.
3. The architect's practice will be reviewed by discussing the design process as an intellectual activity that architects are involved with to different extents. Also the architect and the user will be discussed as the two main parties associated directly with the design process of private houses.

The Palestinian architect will be reviewed with special reference to the architects of Nablus, the site where both the architect, as well as the house user case studies were carried out (*Chapter 8*). Descriptive statistics of Nablus architects will be used and the results can be generalised to the architects in the West-Bank as a whole.

3.2. THE ARCHITECT'S PROFILE

The profile of the Palestinian architect presents general information related to architects in the West-Bank, such as a brief introduction to the initiation of the architectural profession in Palestine, the distribution of architects among the main cities of the West-Bank, the length of their professional experience, as well as the growth in their numbers. In addition, some information and comparisons will be used to give an account of the Palestinian architect in terms of gender.

3.2.1. General

The establishment of the Jordanian Engineering Association in 1958 could be said to mark the initial steps towards organising the profession of architecture and its practice, together with other branches of engineering in the West-Bank, which was part of Jordan

at that time. The engineering association, however had two centres, one in Amman and the other in Jerusalem. The latter began in 1963 (The engineer directory, 1996).

Architects in Palestine are called architectural engineers, and started their professional practice there during the 1950s. Today, in the West-Bank, architects are licensed for practice through the Engineering association/ Jerusalem, which is still associated with the Jordanian Engineering Association. Table 3.1 compares the percentage of architects relative to other engineering specialities according to the Engineering Association/ Jerusalem centre in January 1996. It shows that in the West-Bank civil engineers comprised the highest percentage compared to other engineering specialities.

Table 3.1: Distribution of different engineering specialities registered with the engineering association, West-Bank/ Jerusalem branch in January 1996.

	Speciality	%
1	Civil engineers	40 %
2	Electrical engineers	25 %
3	Mechanical engineers	17 %
4	Architects	11 %
5	Chemical engineers	4 %
6	Others	3 %

Architects affiliated to the engineering association are distributed among seven cities of the West-Bank. Their distribution in January 1996 according to the engineering association/ Jerusalem centre is indicated by figure 3.1. It shows that more architects are concentrated in the city of Nablus i.e. the site where both case studies of this research will be carried out.

Figure 3.1: Pie chart representing the distribution of Palestinian architects amongst cities

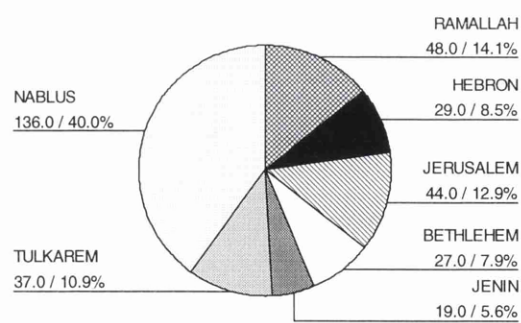


Figure 3.1 suggests that 40% of the total number of practising architects in the West Bank and Jerusalem are centred in Nablus. This could be due to the fact that Nablus has the largest population among the cities of the West-Bank after Jerusalem. Furthermore, the department of architecture at An- Najah university was established in Nablus in

1979. The first architects graduated from there in 1986, however the number of graduates from local universities (Al-Najah and Birzeit universities) are rising continuously. In December 1996, 42.86% of the total number of registered architects in Nablus graduated from local Palestinian universities.

In general, the number of practising architects in Palestine has increased sharply during the last few years. For example in Nablus, according to the latest statistics, more than half the number of architects graduated during the nineties i.e. 54.9% (figure 3.2).

This sharp growth is obvious from figure 3.3. The curve is negatively skewed i.e. both the mode and the median fall on the right side of the curve.

The mean is 1989, while the median, which is the middle value among the distribution, is 1991, and the mode, which is the most popular value among the distribution, is 1995.

3.2.2. Male/ Female Architects

Female architects in Palestine started to embark on the profession of architecture only recently. For example the first female architects in Nablus graduated during the 1980s, and their number has started to increase over the last few years (figure 3.4).

Figure 3.2: Pie chart showing the distribution of Nablus architects by year of graduation according to the Engineering association/ Jerusalem centre, December 1996.

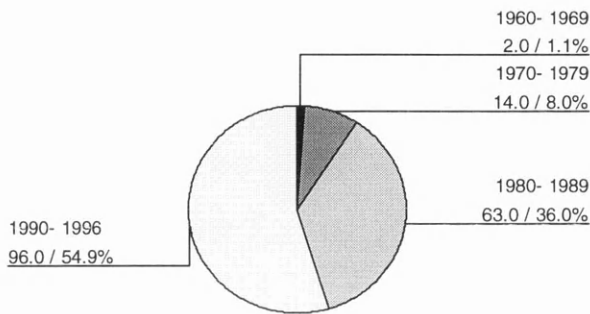


Figure 3.3: Skew distribution for Nablus architects by the year of graduation according to the Engineering association/ Jerusalem centre, December 1996.

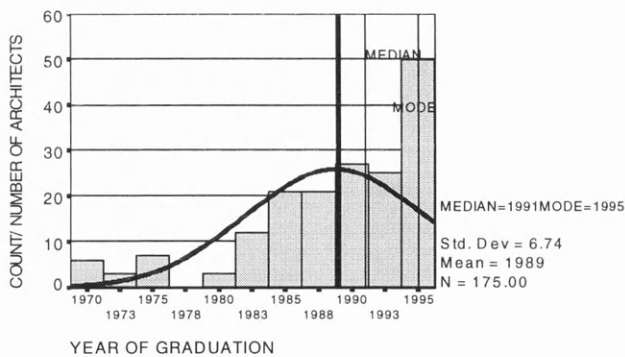


Figure 3.4: Stack bar diagram indicating the gender distribution of Nablus architects by the year of graduation

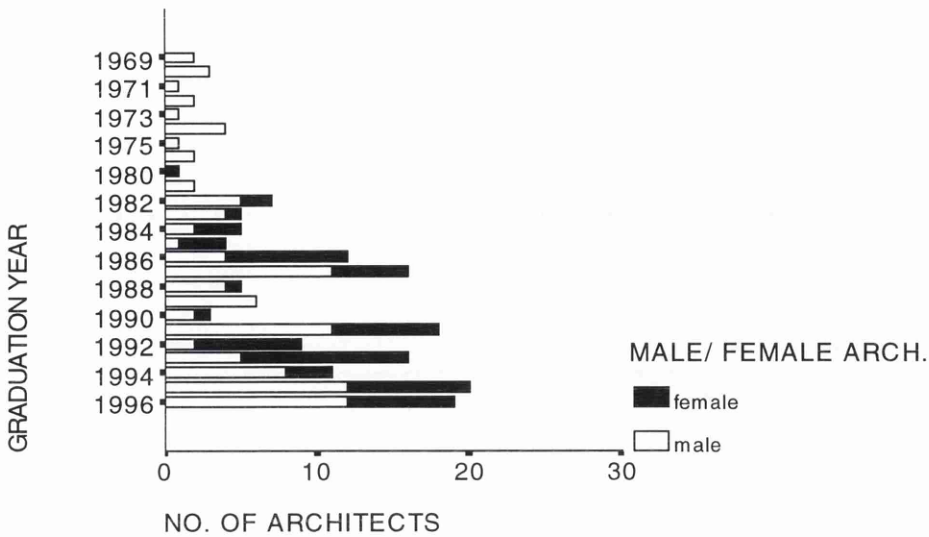
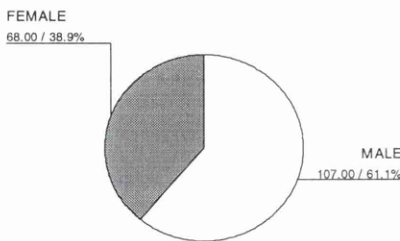


Figure 3.5 compares the number of male and female architects in Nablus in December 1996. The figure implies that 38.9% of the total number of registered architects in Nablus are females. The number of architects as a whole has increased during the last few years due to the increased demand for architects in the West-Bank compared to a low demand for civil engineers and other specialities.

However the increase in the number of female graduates was due to the opportunity given to them to study architecture in local universities, as socially, it is not preferable among Palestinians to send females to study abroad.

Figure 3.5: Pie chart represents the ratio of male to female architects of Nablus in December 1996



3.3. THE ARCHITECT’S EDUCATION

Broadbent (1995:10) argued that tension has always existed between architectural education and practice. He also remarked that architecture has been learnt through two different methods: theory in classrooms, and practice on the job or in the office. On the other hand, Tschumi (1995:24) pointed out that the architect, at least until the end of the 17th century, learned the profession outside the academic environment.

Discussing the methods of education, Lawson (1980: 32) stressed that architects are mainly taught by example and practice, however they are judged by the solution or the end product rather than the method they adopt to arrive at the solution, while Page (1963: 208) argued that cultivation of design strategies are an important aspect during education. Atkinson (1926:1,2), on the other hand, stressed the importance of historical knowledge for the architect. He argued that the architect who ignores what has been done in the past is in danger of wasting his time solving problems which have been solved already.

Therefore educating architects could be pursued by theory, and practice with the use of historical knowledge and examples. However, the approach to the discipline varies from one school to the other. Raskin (1974:96-97) classified schools of architecture world-wide according to the emphasis they put on various aspects of architectural study as:

1. Traditional: these schools stress the design project method of study, using technical and theoretical courses as supplementary to their central purpose which is architectural design. The largest number of schools fall in this category.
2. Bauhaus: the Bauhaus approach is adopted by a smaller number of schools. It gives new concepts of functionalism and honesty of structural expression. In this system students do not design until they have become familiar with materials and construction.
3. Community: still fairly rare, it is based on the concept that architecture is part of the sociological process of mankind, along with economics, environment, and city planning. This school focuses on urban studies, and the collection of data concerning race, income levels, employment, transport, and so on, as a background to design. Accordingly, the design of an individual building may only be considered in relation to community.

In order to comprehend the architect's education and relate it to the main problem of this study, the development of architectural education as a universal discipline will be reviewed in general, and the education of the Palestinian architect will be presented in particular.

3.3.1. Architectural Education: An Historical Review

Architectural education has been reviewed during different historical epochs adopted according to classifications made for the study of the history of architecture (Fletcher,

1975) (Yarwood, 1974) into: The Ancient, Medieval, Renaissance and Neo-classical periods, and the twentieth century.

The ancient period: Training of early Egyptian, Greek, and Roman architects had both practical and theoretical sides and was mainly based on apprenticeship (Kostof, 1977) (Briggs, 1927) (Broadbent,1995).

The Medieval period: During the Middle Ages, training of the architect as master-builder was focused on masonry (Brigs,1927: 74). However, during the Gothic period the architect was distinguished from the master- builder by the mastery of the theoretical implication of geometry. The training of the Gothic architect was usually based on apprenticeship, practical experience and travel (Kostof,1977).

On the other side of the world, training of Muslim architects during the medieval period focused on geometry and on training in one or more crafts. The structural stability of the building was the responsibility of the architect (Ibn Khldoon in his (Muqaddima, Ch.25, cited in Kostof, 1977:65)

The Renaissance period: The education of architects during the early Renaissance period was based on the study of the remains of Roman antiquity. Brunelleschi (1377-1446) was the first of a long line of Renaissance architects who followed that tradition (Ettlinger, 1977).

Until the middle of the seventeenth century, the training of an architect consisted mainly of measuring Roman antiquities, drawing, mathematics, geometry, perspective, and mechanics (Briggs, 1927:169). Drexler (1977: 62) stated that one of the most significant changes that the Renaissance brought about in architectural training was that the workshop was no longer at the construction site, but had become a studio, an atelier. Accordingly drawing became the first skill for the student of architecture to learn.

The Neo-classical period: In 1671 the Academie Royale d'Architecture was established in France; it was considered the first official school of architecture, and significantly altered architectural practice. At the academy, students of architecture had theoretical

material, while they learned to design in the atelier of their masters. The method of teaching developed by the Royal Academy influenced the way architecture was taught all over Europe in the eighteenth and nineteenth centuries (Rosenfeld, 1977:162). It was the first school of architecture based its education on the split between theory and practice; architecture was no longer learnt on site - the architect had to go to school (Tschumi, 1995:24).

In 1819 the Ecole Royal des Beaux-Arts was formed; its syllabus included theory and history of architecture, construction, perspective, mathematics, physics, chemistry, descriptive geometry, building law, general history, and the history of French architecture, in addition to the monthly architectural competitions (Broadbent, 1995:15). The Ecole taught architecture until 1968. It was founded on an ideal model associated with classical architecture and its emulation (Musy, 1980:32).

The twentieth century: Founded by Walter Gropius, the Bauhaus (1919-1933) aimed at rescuing all the arts from isolation and training architects, painters and sculptors of the future to combine their skills in co-operative projects.

The Bauhaus curriculum included practical and theoretical aspects of the plastic arts (architecture, painting, and sculpture) together with their handicraft branches (Dearstyne, 1986: 38, 42). What characterises the Bauhaus however, is the revolutionary approach it brought to art education, which rejected all historical styles. The school achieved a language of architectural design liberated from the historical precedents of hundreds of years (Whitford, 1984: 201).

The Illinois institute of technology initiated its architecture program during the mid fifties. Mies Van der Rohe, the director, introduced a course in architecture consisting of study of means (materials: wood, stone, brick, steel, and concrete), purpose (building types) and planning and creating (the supporting and compelling forces of the time: material, functional, and spiritual) (Broadbent, 1995:19).

Several schools of architecture were established during the twentieth century subsequent to the Bauhaus and Illinois institute, such as London's Architectural Association,

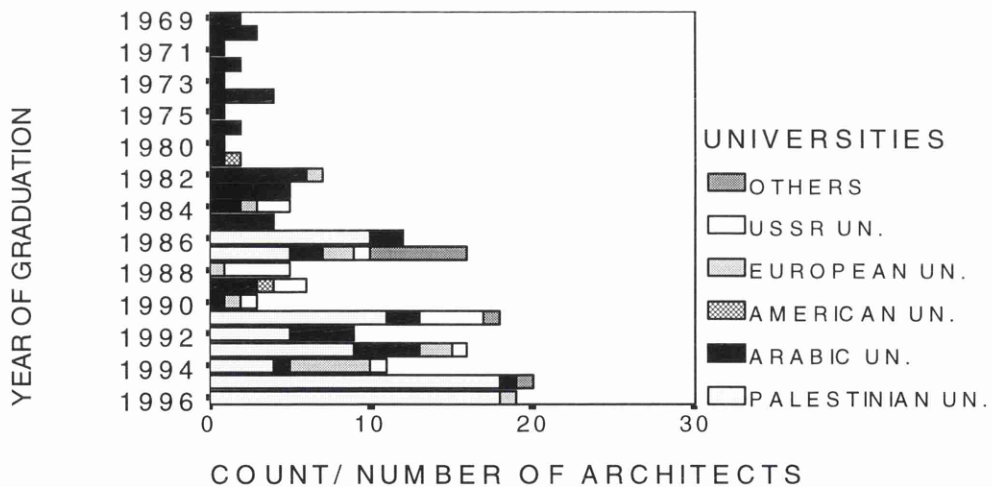
Cambridge, Harvard, and Yale which aimed to deliver theory, experience, style, and imagination (Crison & Lubbock, 1994).

3.3.2. Education of Palestinian Architects

Before the foundation of local schools of architecture in the West-Bank, Palestinian architects were educated in Arab or foreign universities. The first school of architecture was established in Nablus at Al-Najah university in 1979 followed in 1986 by the department of architecture at Birziet university.

The impact of the establishment of these two schools was discerned through the increase in the number of architects in Palestine; a large percentage of architects in the West-Bank are now local university graduates. For example figure 3.6 demonstrates the growth in the number of Nablus architects in general and the increase in the Palestinian universities' graduates in particular. It shows that during the years 1994- 96 most of the architects in Nablus graduated from local universities.

Figure 3.6: Stacked bar diagram showing the distribution of Nablus architects' place of graduation by the year of graduation according to the Engineering association, Jerusalem centre/ December 1996.



The figure indicates that all Nablus architects before 1980 graduated from Arab universities and that Palestinian university graduates began to appear in 1986. It is obvious from the figure that local universities have contributed to the increase in the number of architects in Nablus.

Figure 3.7 indicates the distribution of Nablus architects by their place of graduation according to statistical data of December 1996. It indicates that the largest number of Nablus architects graduated from Palestinian local universities, followed by Arab universities, while a small number of architects were graduates of other universities; in the USSR, Europe, and America, the Philippine and Pakistan. During the sixties, seventies and early eighties, the largest number of Nablus architects graduated from Arab universities, in particular Egypt, Jordan, Syria, Lebanon, Libya, while late 80 and during the 90s the largest number of graduates were from Palestinian universities. Figure 3.8 indicates the distribution of Arab university graduates among Nablus architects in December 1996.

Figure 3.7: Pie chart showing the distribution of Nablus architects by the university of graduation in December 1996.

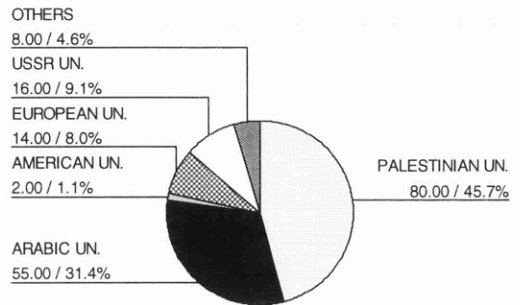


Fig 3.8: Pie chart showing the distribution of Arabic universities' graduates in Nablus in December/ 1996.

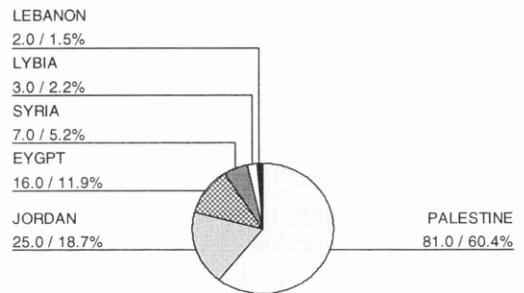


Figure 3.9 compares the spread of female and male architects according to their graduation year. It is obvious that female architects were encouraged to study architecture after the establishment of local schools. Therefore female graduates' spread (between the mid 80s and mid 90s) is smaller than that of male architects.

Figure 3.9: Boxplot showing the spread of Nablus architects' year of graduation by sex.

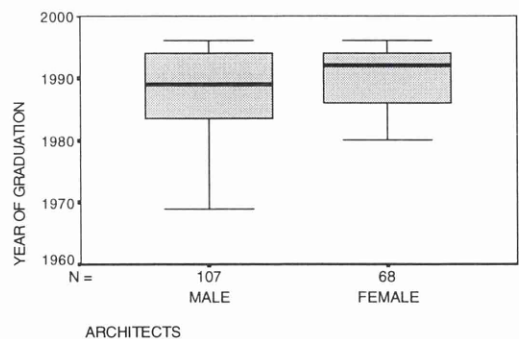
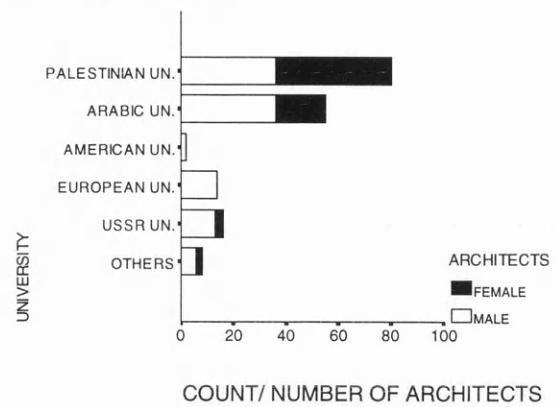


Figure 3.10 indicates that the distribution of Nablus architect's place of graduation by gender. It shows that the largest number of male and female architects graduated from Palestinian and Arab universities.

The reason behind the increased number of local university graduates is the high cost of study abroad compared to the cheaper cost of education in the West-Bank. The conservative Palestinian society does not encourage female education away from the family, as was mentioned previously, in addition to various travel restrictions imposed by the Israelis on young males.

Figure 3.10: Distribution of Nablus architects place of graduation by sex.



I. Schools of architecture in Palestinian

Again, two schools of architecture have been founded in the West-bank within the past twenty years. In fact the first, established at Al-Najah university in Nablus in 1979, started its architectural course in the academic year 1980/ 1981. For the purpose of shedding light on the education offered by local Palestinian universities, and as an example, the curriculum of the department of architecture at A-Najah university will be analysed and discussed. The course duration at Al-Najah university is five years full-time during which students are trained in various skills and study various subjects related to the field of architecture, namely:

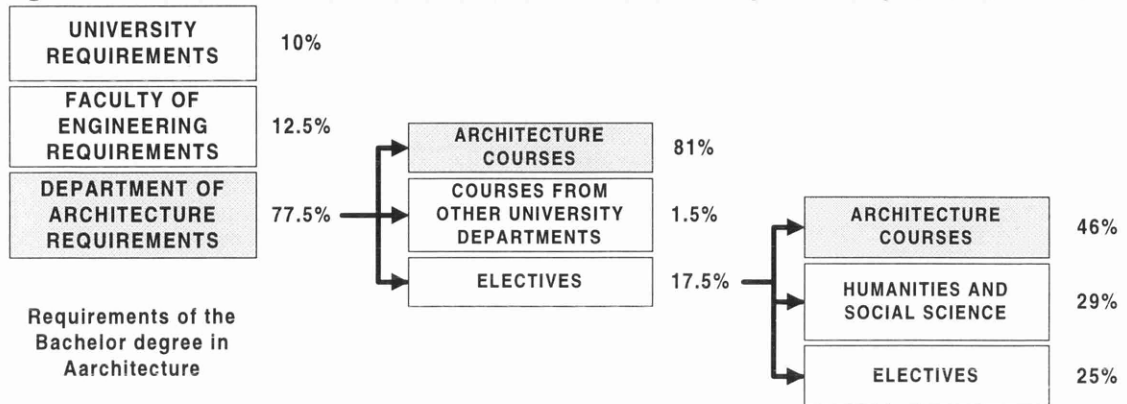
- Architectural design
- History and theories of architecture
- Materials and building construction
- Structure
- Art subjects
- Architectural practice
- Environmental systems in architecture

As illustrated in figure 3.11 the subjects covered by the curriculum of Al-Najah university are varied and multi-dimensional as students have to satisfy requirements of both of the university, and the faculty of engineering, in addition to the main course in the department of architecture.

The university requirements range from language (Arabic and English), to Islamic education and studies, physical education, and society service. The faculty of

engineering's main courses are: math, physics, workshops, introduction to computing, and geology. Figure 3.11 also suggests the weighting allocated to different requirements. The calculation of the percentages indicated was based on the number of credit hours assigned for different subjects (the curriculum of architecture, Al-Najah uni., 1997) .

Figure 3.11 : Structure of the curriculum of architecture at Al-Najah university/ Nablus, Palestine.



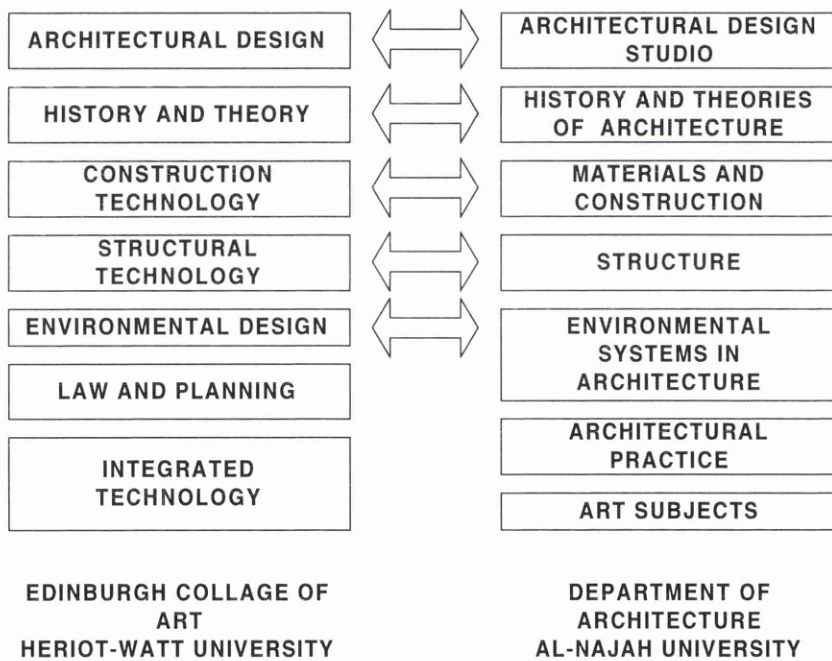
The figure shows that architectural subjects constitute roughly 69% $((81\% + (46\% \times 17.5)) \times 77.5 = 69\%$ approximately) of the overall curriculum subjects, with the addition of various architectural courses that could be taken by the student as electives.

Within the curriculum of the basic architectural course emphasis is on studio design. It starts in the first year with elementary and basic knowledge, and ends in the fifth year with the final design project. After reviewing the curriculum of architecture of Al-Najah university it could be concluded that :

1. More than 30% of the subjects the student has to cover over five years of study are not directly related to architecture. This could have an advantage of introducing the student of architecture to other disciplines, while the disadvantage could arise from the fear that students could be wasting their time on other subjects instead of covering a shorter more focused course.
2. The introduction of electives within the curriculum (figure 3.11) could allow students to choose subjects according to their interest from the university or departmental elective courses.
3. It is implied by the curriculum that focus is on the architectural studio design courses, where design projects are the primary tasks that occupy most if not all of the students' time.

For the purpose of the present study, two architecture courses will be compared: one Islamic, Arabic, and one Western. This in order to establish a case based on some scholars' arguments that the model of architectural education adopted in the Islamic and Arab countries is Western in origin (3.3.3), and could be similar to other models of European universities. The course of Bachelor of architecture at Al-Najah university, Nablus, Palestine will be compared to that of the Edinburgh Collage of Art, Heriot-Watt university, UK. Figure 3.12 compares the subjects covered by both schools. The Edinburgh Collage of art offers a three- year course leading to a BArch or an honour degree option pursued by full-time four year program, which "... is focused around the studio and the design projects" (Edinburgh collage of Art, prospectus, 1997: 74)

Figure 3.12: A comparison between subjects taught at the schools of architecture of both the Edinburgh Collage of Art, Heriot-Watt university and Al-Najah university, Nablus.



Arrows suggest possible similarities between subjects covered by the two departments.

Basically the two schools of architecture will be compared in terms of course duration, main focus, and different subjects offered.

It was obvious that the school of architecture at Al-Najah university has a longer course duration compared to the Edinburgh Collage of Art and this due to different subjects the student of the former university has to cover as a prerequisite to architecture. On the

other hand, the curriculum in both schools is focused on studio design as the means to acquire the basic skills in architecture. Both schools, however hold studio design as the focal point around which all other subjects revolve, supplement knowledge, accumulate information, and enrich the students natural abilities to deal with the complex and multi-disciplinary subject of architecture.

The analysis of course contents is beyond the scope of the study. However figure 3.12 suggests possible similarities between most of the subjects covered by the two departments, i.e. architectural design, history and theories of architecture, construction, structure, and environmental design. Nonetheless, it is obvious that there is more stress on technology within the Edinburgh collage of Art's curriculum, which could be due to more technical advancement in the field of building construction in Britain.

Therefore it could be argued that the Western model for architectural education might have been adopted by different universities all over the world in general and by Islamic, Arabic, or Middle Eastern universities in particular. This could be because it was the available model which evolved as a result of certain developments and implications occurring in Europe during the 19th and the 20th century as discussed in the development of architectural education. The basic feature of this model is the design studio work which enables students, with the assistance of a teacher, to learn architectural design by practice.

3.3.3. The Education of an Architect and its Impact on Transformation of the Traditional Built Environment

Several scholars have considered the educational background of the contemporary architects of the Islamic, Arabic, or Middle eastern countries an important factor that has influenced and encouraged the architect to abandon the traditional concepts of architectural design, and consequently to follow the international new trends in architecture.

Arkoun (1983:53) raised some issues related to training of architects today and in the past. He argued that education has introduced the architect as a professional, who acquired the know how from specialised universities and institutions. School education

has substituted the capacities and talents transmitted from one generation to another in traditional communities. He concluded that the architect is now building for the users, but not with them as “he brings to bear technical experience, but not sensitivity and collective symbolism in the way it was possible in building with the people”

Huet (1983:49) discussed the position of architects in the contemporary societies of North Africa. He remarked that their alienation from their own culture and their isolation from the current thinking of their people are results of their education, which adopts the Western model. He added that those architects become unable to understand their traditional architecture any more, consequently they produce buildings that are ill-adapted to the needs and social demands of their people.

The western model here refers to the models of architectural education initiated in Europe during the 19th and the 20th centuries and other models adopted in North America. Development of architectural education was discussed earlier (3.3.1).

Cejka (1982) described the situation in Jordan. He stated that architects who were educated according to the Western model were responsible for the shift or change in the prestige value of their societies. Those architects, in the name of progress, have neglected and degraded their traditional heritage and searched for new models in spite of the fact that these new models are less adapted to their people than traditional ones. This same situation applies to Palestine, as 31% of the Palestinians live in Jordan (Tamari,1994: 17).

It seems that the problem was not only related to the architects educated in western countries (Europe or the United States of America). Huet (1983:49) explained that even when schools of architecture were established in the Arab world, the Western model of architectural education were adopted in these universities. Also architects responsible for teaching in these universities had completed their education in Western universities. Eventually, most of the architects who graduated from local universities ceased to translate the social ,cultural and spiritual needs of their people. The reason is that those

architects were not trained to appreciate their cultural heritage or to think and create new concepts that will combine what is appropriate from traditional and universal architecture.

On the other hand Kuban (1983:54) believed that it is not the problem of western or non-western models but the type of education the architect received and to what extent he was trained to interact with his surroundings and to appreciate, feel and understand the needs and aspirations of the average user. Khan (1989: 293) argued that it appears that in architectural education, there are two forces at work in all cultures “ those of universality and particularisation”. While the universality in architecture can be manifested through Internationalism/ Modernism and high-tech buildings, particularisation or regionalism may be demonstrated through vernacular architecture. He stressed that this duality is important to consider in architectural education and in preparing students not only to be able to work within their culture but to equip them with the ability to understand other cultures. He called for a broader- based education which can embrace three major elements; technology, form, and culture.

3.4. DESIGN: ORIGIN AND BACKGROUND

A great difference in approach existed between the traditional master builder and the architect, however the traditional buildings were erected according to an acceptable model arrived at by the people and builders by trial and error. Lawson (1990:11-14) remarked that in vernacular design there is no design problem but rather a traditional form of solution with variations to suit different circumstances. He referred to “blacksmith design” to describe the making of traditional handicrafts by craftsmen who although having an initial design in mind, are at liberty to change it while involved in the process of making the article. In the past this same informal concept but on a large scale was employed in the construction of sophisticated designs with a lack of knowledge about the theoretical background. This has changed and the architect arrives at a design solution through a more formal design process.

Alexander (1964) argued that design in traditional craft- based communities was an unselfconscious process, thus buildings and artefacts were produced according to a pre-established model, and there was no design in the true sense, just wrong and right ways of doing things. He explained that the self-conscious professionalism process was a result of rapid change in society and the increase complexity of problems the designer had to deal with. This necessitated new established models after the traditional ones failed to adapt. The slow moving traditional culture allowed enough time for adaptation, while now changes happen more rapidly.

3.4.1. The Design Process

It might be interesting to begin the discussion of the design process with a statement by Jones (1970:4), who says "the effect of designing is to initiate change in the man -made things". Therefore, if the same concept is to be applied to the design of houses as man-made artefacts, the architect as a designer is in one way or another initiating change by the act of designing. Jones further explained that the process of generating change in man made things is conceived through a series of events which starts from the supply of materials and ends with "the effect on the society at large of the system of which the product forms a part". Therefore in the case of house design the effect of change could be on the built environment.

On the other hand, Rapoport (1970:20, 21) believes that design as a creative process could be seen as a choice process which involves solving problems by making decisions and choices, while change in the physical environment could be caused through the design process by elimination of choice from among different alternatives. Thus if Rapoport's argument is to be applied to the Palestinian house, change could have been induced by elimination of the courtyard as a choice. Therefore both authors agree that design can cause change, or that the result of design could be change. So what do we mean by design and what is the design process?

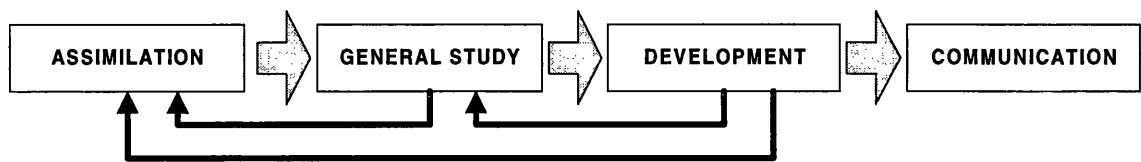
Archer (1969: 77) defined the term design as " to conceive the idea for and prepare a description of a proposed system, artefact or aggregation of artefacts". According to Lawson (1990:1,6) design as a field is related to "the creation of objects or places which

have a practical purpose and which are intended both to be looked at and used”, while the design process is a mental process which involves operating and blending various kinds of information into coherent ideas and finally generating realisation of these ideas.

Basically, the term design process is used to describe all activities that take place from the time a problem is first examined to the final completion of the design (Broadbent, 1988: 255). To describe the phases of the design process a map was introduced by RIBA in 1965 (figure 3.13). It described a plan of work comprising of four phases:

1) assimilation 2) general study 3) development 4) communication.

Figure 3.13 : The RIBA plan of work map of the design process (1965)



Source: Cited in Lawson (1980:24)

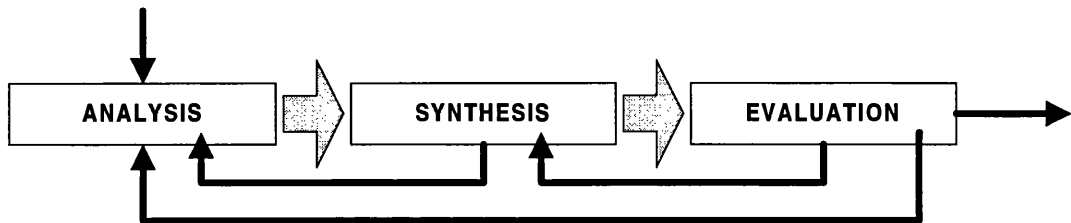
During the assimilation phase the information related to the problem is accumulated, while the general study involves investigation of the problem and possible solutions. The development phase is a refinement of one or more solutions isolated during the general study phase, and finally the communication phase during which one or more design solutions are discussed inside or outside design team.

Lawson (1980:24) criticised the RIBA map. He argued that although the diagram suggests systematic procession from assimilation to communication, the process of design is not necessarily sequential. It is difficult, for example, to decide what information to gather without conducting some investigation of the problem first.

Markus (1969) and Maver (1970) (quoted in Lawson,1980) argued that the design process consists of four phases: 1) analysis 2) synthesis 3) appraisal 4) decision. Thus a comprehensive view of the design method requires both a decision sequence and a design process. Jones (1963:53) suggested three phases for the design process 1)analysis 2) synthesis 3) evaluation.

While analysis entails ordering of the problem by exploring relationships, accumulating the information available, and classification of objectives, synthesis on the other hand involves generating of solutions, while appraisal gives the critical evaluation of suggested solutions in relation to the objectives identified in the analysis phase. (Lawson, 1980:27)

Figure 3.14 : A Simple diagram for the design process. It indicates that the map should allow for return loop to all preceding functions.



Source: Cited in Lawson 1990:28

Lawson suggested that the map of the design process should allow for return loops between different stages of the process particularly between evaluation and synthesis, where this is shown in figure 3.14. “in practice you go round several times” (Page 1963:209).

Page (1963:205), in reviewing the conference papers on design methods in 1963, argued that one point of agreement which was found between participants was that systematic design is a three stage process, demanding analysis, synthesis, and evaluation.

Broadbent (1988:255) suggested that the design process, as a general way of solving problems, has six phases: 1) analysis, 2) synthesis, 3) evaluation, 4) optimisation, 5) revision, and 6) implementation. Lang (1974: 43), on the other hand, argued that the design process consists of a number of phases: an intelligence or programming phase, and a design phase, in addition to phases involving choice, implementation, and post-construction evaluation, while, to Kirk & Spreckelmeyer (1988: 12-25) the design process is part of the facility cycle, which is composed of four stages: feasibility, design, construction, and occupancy.

The main characteristics of the design process are summarised by Lawson (1990:90-93):

1. The design process is endless, which means that the design of any building cannot be the final product and although the architect stops when a satisfactory solution is reached, he/ she can always go back and refine the design. Time ,money, and information are often the major limiting factors that face the architect.
2. There is certainly no one correct process, or there is no optimal answer. There is no sequence of the operation that can guarantee the result or the design, which is not the logical outcome of the problem.
3. The process involves finding as well as solving problems. Problems and solutions in modern thinking emerge together rather than one logically following the other. Thus the process is less linear than suggested by different maps.
4. Surely, the design involves subjective value judgements.
5. Design is a prescriptive activity. Designers often deal with the question of what might be, could be and should be, rather than with the question of what is, how and why. Designers may be seen to prescribe and create for the future.
6. Designers work in the context of a need for action. Design is not an end in itself, its main objective is to reach a result in some action that can change the environment. Architects most of the time have to take decisions without delay to avoid unfortunate consequences, and they must face all the problems that emerge in a limited time. Design is often a matter of compromise decisions made on the basis of inadequate information .

Johns (1984:22) criticised the work maps and the systematic process for describing design; he stated that the “mind is destroyed if it is encased in a fixed frame of reference”. On the other hand, to draw such a map the designer must be observed in action and there is always something hidden in the mind of the designer which observation cannot detect. Usually, architects do not discuss their methods of work or the process they adopt in arriving at their designs (Lawson, 1994: 1).

Following the review of the design process, the architect and the client as the two main parties involved directly in the design of houses will be discussed.

1. The architect

Raskin (1974:5, 20) argued that the architect's responsibility is tremendous and that the architect speaks for his/ her time through his/her buildings. Raskin further stressed that if the architect is to design buildings he/ she must be a part of his/her time, a part of his/her culture in general, and a part of the group that he/ she serves in particular. Mainly, the architect's buildings are describing the society to itself and to the future.

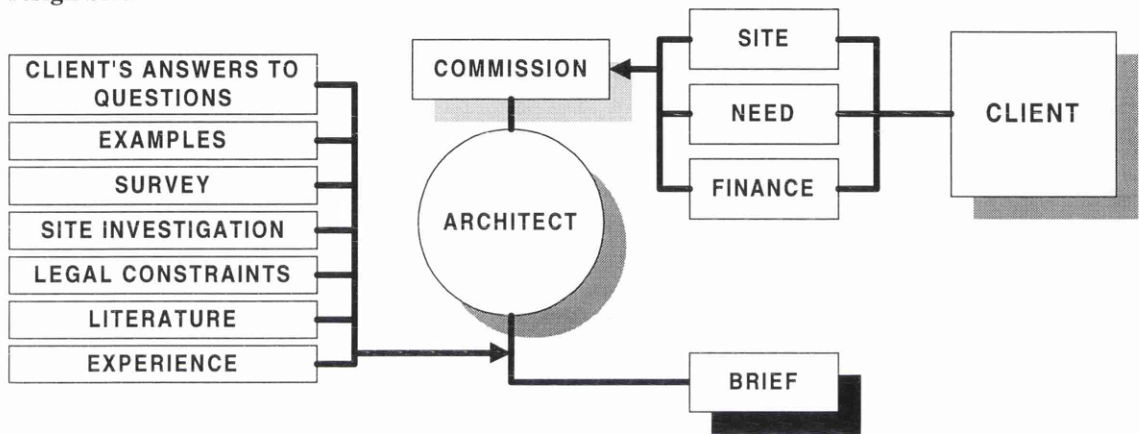
The architect or the designer exists within a historical framework of time. While education and experience present his/ her past, he/ she approaches any particular design with personal knowledge derived from business, the social world, and the physical world of experience (Page1963:203). Lawson (1990:5) remarked that the architect cannot escape the influence of social science, technology, and art on his/ her work, as architecture falls between mathematical and imaginative fields. Therefore what can influence the architect in his designs is the special characteristics of his time (technology, special needs of his society etc.), his past experience and education, as well his particular personal knowledge and everyday experience.

Design forms the major activity for architects. Jones (1970:6) argued that designing is difficult because designers have to use current information to predict a future state, and that "the final outcome has to be assumed before the means of achieving it can be explored".

The architect or the designer designs an artefact or a building for a specific user or users, therefore designers must understand something of the nature of those users and their needs. Kernohan et al. (1992:16-20) argued that in most cases when conflict exists between the objectives of designer architects and the objectives of users, big or small, it leads to a mismatch between the artefact and the activity or use, and that the mismatch results in user dissatisfaction. Page (1963:208) stressed that the architect in most cases faces impositions from the client. These are summarised by cost limitations, or preferences and prejudices etc. Also there are other influences which are embodied in the culture, like fashion and style.

As part of the design process Zunde (1982:9, 41) suggested that in any design project the architect obtains information from different sources. Some information is provided by the client, i.e. site, need, requirements, and finance. These are peculiar to each specific commission, while other data are part of the architect's background such as his/her education and experience. These are likely to be relevant whatever the problem. In addition, there will be information formed through the architect's investigations, survey, and literature review for each specific commission. Figure 3.15 indicates different sources of information the architect depends upon in formulating his brief.

Figure 3.15: Different sources that provide the architect with information needed for producing a design brief.



Source: Part of design process diagram (Zunde, 1982: 9)

The figure implies that the client approaches the architect with specific constraints of finance, need and site, while the architect depends on his own experience, and investigation to deal with different possibilities and constraints to produce a brief.

The brief or programming phase consists of four elements:

1. Identification of the project's goals
2. Definition of the area requirements in terms of physical space, and activities, including anticipated flexibility.
3. Development of adjacency matrices
4. Establishing alternatives in terms of activities, personnel, size of units, and relationships to site and community.(Heimsath., 1977, Quoted in Heath, 1984:186)

Therefore working within limits and constraints, the architect's task is to understand user's needs and try his/ her best to meet with the client's objectives in order to arrive at the user's satisfaction. However, Jones (1970:9) argued that the objectives of the

designer architect extends beyond the approval of his client. As the architect's or the designer objectives "became less concerned with the product itself and more concerned with the changes that users and the society as a whole are expecting to make in order to adapt and to benefit from the new design". Thus the architect should always think in terms of the effect of his /her design has on the society as a whole and on the built environment in the present and the future.

II. The client (user)

Lawson (1994:5) argued that the relationship between the architect and his/ her client can vary greatly, while at its best it could be highly interactive and creative.

Based on man- environment research, Rapoport (1982: 15,16) raised an important issue related to users and designers. He argued that they are very different in their reactions to environments, their preferences ..etc. On the other hand he preferred the user's meaning to the architect's because it is the meaning of the everyday environment not of famous buildings. Thus it seems that Rapoport thinks that clients or users are more practical in their assessment of buildings compared to the more formal or artistic approach of architects.

Fathy (1960:226) argued that in the Middle East the client used to play an essential part in the traditional method of construction, while when the architect held responsibility for design as a professional, the user's role was limited. Fathy also accused the architect of ignoring the user and excluding the craftsman from the architectural profession. Consequently this discarded the tradition of the user being heavily involved in construction in the Arab world.

The user was discussed in terms of his needs, requirements, preferences and satisfaction in chapter one of the study.

3.5. CONCLUSIONS

Several factors have made it difficult for users or builders to handle the complex job of house construction as used to be in the past namely: the soci-cultural change experienced in Palestine, the alteration in lifestyle of Palestinian users, the increased sophistication introduced to the architectural profession in terms of new building materials, and technology, and the imposition of different laws and regulations (building codes, planning regulations and laws to organise the architectural profession). Thus the architect as the professional designer was appointed to the task of design.

Reviewing the architect's profile has highlighted several points:

1. The number of architects in the West Bank is in continuous and sharp growth. Although no problems have recently been detected in relation to unemployment among architects, this does not mean that problems will not face the architect's employment in the future. This point needs further investigation which is beyond the scope of the study.
2. The number of female architects is increasing, and this has been due to the establishment of local schools of architecture.
3. More than half of the practising architects in Nablus graduated during the last few years, i.e. during the nineties. This could have pros and cons. One advantage could be that new ideas and fresh blood has been introduced to the field, while a disadvantage could be the lesser experience and knowledge of the younger compared to the older generation of architects. Investigation in chapter eight will reveal more information as a result of comparing different generations of architects concerning different issues under investigation by the study.

Review of the architect's education could shed light on certain aspects:

1. The local universities of the West-Bank have contributed to a large extent to the increase in the number of architects, and this was evident in the last few years. This could suggest that for the future local universities will continue to graduate most of the Palestinian practising architects. Whether the West-Bank can or cannot absorb all new architects is a question beyond the scope of this research.

2. The local schools of architecture ceased to develop their own program according to the need of the society in terms of stressing certain issues related to local traditional architecture, low cost buildings, energy efficient architecture etc. The model they have adopted is universal, and this could be due to lack of experience (the two schools of architecture are between 10 and 17 years old and the staff members in both universities are relatively young, graduating during the 80s and 90s).
3. The Western model of education, even if adopted by different universities of the East, has to be developed and adapted to the specification of each country. Architectural education ought to be inclusive to both aspects of “universality and particularisation” (Khan, 1989). Part of the educational process is the introduction to different approaches and trends in architecture as well as the appreciation of particular problems, and needs of the people the architect is serving.
4. Architectural design is the main subject that the curricula of Palestinian schools of architecture focus on as the means to acquire the basic skills in architecture.

After reviewing various ideas and concepts proposed by scholars concerning design and the design process it can be concluded that:

1. Either to a large or a small extent, design will introduce change. Basically, the aim of the designer is to bring something new and his /her objective is to introduce an improvement in a certain product. However to what extent he/she can succeed in the aspired objective depends on the user’s satisfaction or dissatisfaction with the end product or the building.
2. Therefore, architects are expected to contribute to change in every design they produce, and it is the architect’s duty to look for new means, solutions, and ways to satisfy his/ her client according to his /her adopted lifestyle.
3. The architect in Palestine could have contributed to change in the built environment in general and the house design in particular. His main aim is to improve the living environment for users and to satisfy their needs.

These issues will be examined in detail through a rigorous case study (*Chapter 8*). The assumption about the role of the Palestinian architect on the transformation of the Palestinian house design will be tested empirically.

3.6. REFERENCES

- ABEL, C.(1995): “ Globalism and the Regional response, Educational Foundations”, in eds. Pearce & Toy, *Educating Architects*, Academy Editions, UK, pp. 80-87.
- ALEXANDER, C. (1964): *Notes on the Synthesis of Form*, Harvard University Press, Cambridge, Massachusetts.
- AL-NAJAH UNIVERSITY (1996): *Program for Bachelor Degree in Architecture*, Department of Architecture, Nablus, West-Bank.
- ARCHER,L.B.(1969): “ The Structure of the Design Process”, in eds. Broadbent, G.,Ward, A., *Design Methods in Architecture*, Lund Humphries, London.
- ARKOUN, M. (1983): “ Building and Meaning in the Islamic World”, *Mimar*, No.8, April-June, pp.50-53.
- ATKINSON, R., BAGENAL, H.(1926): *Elements of Architecture*, Vol.1 Part1, Bouverie House, London.
- BRIGGS, M.(1927): *The Architect in History*, Oxford University Press, England.
- BROADBENT, G., WARD, A.(eds.)(1969): *Design Methods in Architecture*, Lund Humphries for the Architectural Association, London.
- BROADBENT, G. (1988): *Design in Architecture: Architecture and Human Sciences*, David Fulton Publishers, Great Britain, Ch.13.
- BROADBENT, G. (1995): “ Architectural Education” , in eds. Pearce, M., Toy, M., *Educating Architects*, Academy Editions, UK, pp.10-23.
- CEJKA, J.(1982): “Regional Tradition and its Application Contemporary Architecture”, *The Jordanian Engineer*, Amman, No.27, pp.90-100.
- CRINSON, M., LUBBOCK, J.(1994): *Architecture: Art or Profession*. Manchester University Press, Manchester and New York.
- DEARSTYNE, H. (1986): *Inside The Bauhaus*, The Architectural Press Ltd., London.
- DREXLER. A. (ed) (1984): *The Architecture of the Ecole des Beaux- Arts*, Secker & Warburg, London.
- EDINBURGH COLLAGE OF ARTS, HERIOT-WATT UNIVERSITY (1997): *Architecture*, Year book (1997-1998).
- EDINBURGH COLLAGE OF ARTS (1997): Prospectus, 1997-1998 & 1998-1990, Heriot- Watt university.
- ENGINEERING ASSOCIATION (1996): *The Engineer Directory*, Jerusalem Centre, West- Bank.
- ETTLINGER, L.(1977): “ The Emergence of the Italian Architect During the Fifteenth Century”, in S. Kostof (ed.) *The Architect: Chapters in the History of the Profession*, Oxford University Press, New York
- FETHY, I.(1960): *The new Metropolis in the Arab World*, Allied Publishers, New Delhi, London, New York.
- FLETCHER, B. (1975): *A History of Architecture*, 18th ed., the Athlone Press, London.
- HEATH, T.(1984): *Method in Architecture*, John Wiley & Sons, Chichester, New York.
- HUET, B.(1983): “ The Modernity in a Tradition- The Arab Muslim Culture of North Africa”, *Mimar*, No.10, October-December, pp. 49-55.
- JONES, J.C. (1963): “ A Method of Systematic Design”, in eds. Jones, J.C., Thornley, D.G., *Conference on Design Methods*, London, September 1962, pp.53-73.
- JONES, J.C.(1970): *Design Methods: Seeds of Human Futures*, Wiley- Interscience, London, New York,Ch.1.

- JONES, J.C.(1984): *Essays in Design*, John Wiley and sons Ltd. Chichester, New York, Toronto.
- KHAN,H. (1989): “ Architectural Education: Learning from the Developing Countries”, in I. Serageldin (ed.) *Space for Freedom: The Search for Excellence in Muslim Societies*, The Aga khan Award for Architecture, Butterworth Architecture, London, Boston, pp.293-295.
- KIRK, S. J. & SPRECKELMEYER, K. F. (1988): *Creative Design Decisions: A systematic Approach to Problem Solving in Architecture*, Van Nostrand Reinhold Inc., USA ,Ch. 2.
- KOSTOF, S. (1977): *The Architect: Chapters in the History of the Profession*, Oxford University Press, New York.
- KUBAN, D. (1983): “ Modern Versus Traditional: A False Conflict”, *Mimar*, No. 9, July- September, pp.45-58.
- LANG, J. (1974): “ A Model of the Designing Process”, in Lang, J. (ed.), *Designing for Human Behaviour: Architecture and the Behavioural Sciences*, Dowden Hutchinson & Ross, Inc., Pennsylvania. pp. 43-51.
- LAWSON, B.(1980): *How Designers Think*, The Architectural Press, London,Ch.3.
- LAWSON, B.(1990): *How Designers Think: The Design Process Demystified*, Second edition, Butterworth Architecture, London, Boston.
- LAWSON, B.(1994): *Design in Mind*, Butterworth Architecture, Oxford.
- MUSY, J.(1980): " L' Ecole des Beaux- Arts", *Architectural Design*, No 1/2,p. 21-32.
- PAGE, J.K. (1963): “ A review of the Papers Presented at the Conference”, in eds. Jones, J.C., Thornley, D.G., *Conference on Design Methods*, London, September 1962, pp.205-215.
- RAPOPORT, A. (1976): “ Sociocultural Aspects of Man -Environment Studies, in A. Rapoport (ed.) *The Mutual Interaction of People and their Environment a Cross Cultural Perspective*, Mouton Publishers, Paris, pp. 7-35.
- RAPOPORT, A. (1982): *The Meaning of the Built Environment*, SAGE Publication, Beverly Hills, London, New Ddelhi.
- RASKIN, E.(1974): *Architecture and People*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.
- ROSENFELD, M.(1977): “ The Royal Building Administration in France”, in S. Kostof (ed.) *The Architect: Chapters in the History of the Profession*, Oxford University Press, New York.
- STIRLING, J.(1978): " Beaux- Arts Reflections", *Architectural Design*, vol. 48, No 11/12, 1978,pp.8.
- TAMARI, S.(1994): “ Transformation of Palestinian Society: Fragmentation and Occupation” (Arabic translation), in Heiberg, Brumborg et al., *Palestinian Society in Gaza and Arabic Jerusalem: Survey of Living Conditions*, Institute of Palestinian Studies, Beirut.
- TSCHUMI, B.(1995): “ One, Two, Three: Jump”, in eds. Pearce, M., Toy, M., *Educating Architects*, Academy Editions, UK, pp. 24-25.
- WHITFORD, F.(1984): *Bauhaus* , Thames and Hudson, London.
- YARWOOD, D.(1974): *The Architecture of Europe*, B.T. Batesfford, London.
- ZUNDE, J.M. (1982): *Design Procedures: Level 4*, Longman Group Limited, UK, Ch.1,3

4. Chapter Four

**The Research Methodology
Design and the Case Studies**

4.1. INTRODUCTION

This chapter inquires into the problem and explores the research methodology design. It defines the study's main problem, summarises the sub-problems, states the thesis' hypothesis, explains the importance of the study, and analyses the case studies. The main objective of this chapter is to facilitate assimilation of empirical research work presented in the following five chapters and to link the theoretical part of the study with its empirical analysis.

The research hypothesis will be examined mainly by two case studies:

- **Case study one:** The house user
- **Case study two:** The architect

In both case studies, investigation was carried out by questionnaire survey.

4.2. RELEVANT WORK

Few studies have been carried out relevant to the built environment of Palestine or the Palestinian house. Al- Khatib (1985) investigated the socio-economic characteristics and relative housing satisfaction in Nablus. The research case study identifies three sub-groups of users on the basis of the head of household's place of birth, traditional urbanites, rural migrants, and Palestinian refugees. Using a questionnaire survey the socio-economic characteristics of users were examined in terms of housing condition, and users' satisfaction with housing and neighbourhood.

A'Amiry (1987) examined the relationship between social organisation of the peasant community and the built environment of Palestine during the late nineteenth century. The study argues that the peasant community in Palestine would not have accepted change of their built environment, manifested by the use of new building materials, new forms, and techniques unless that community was exposed to external forces of change. Also, Senan (1993) inquired into the rural built environment of Palestine; he investigated the expression of identity in the Palestinian built environment and the impact of Israeli occupation. The study identifies change of the built environment of Palestine during the twentieth century and examines the development of the village house from traditional to modern. It revealed that the traditional house reflects a stronger identity compared to the new one.

A conservation study carried out by Qamhieh (1992) looked into the old city of Nablus. It documents important historical buildings, unveils problems of the old city, and gives proposals for saving the old historical core. Another conservation study carried out by Yousof (1996) involved self- help strategies for conserving the cultural heritage of Palestine. The study introduces an informal frame work with the use of available resources to face different constraints that obstruct conservation of the Palestinian heritage. The research case study was conducted in the old city of Nablus.

Previous studies by A'Amiry (1987) and Sinan (1993) examined the village house and change in the built environment of rural Palestine, but did not use statistics to analyse the data collected, test the significance of the results, and interpret the findings. Al-Khatib (1985) did use statistical techniques, but his study dealt with socio-economic aspects of the house not with its architecture. The conservation study carried out by Qamhieh (1992) was not based on objective methods of data analysis, while Yousof (1996) adopted descriptive statistics to analyse the research data.

In contrast the present study proposes to examine the urban Palestinian house and the change in its design, and uses statistical techniques to interpret the data.

Perhaps what clearly distinguishes this research from others done in the same area is the investigation of the architects' and users' contribution to change in house design, especially the architect's role which is investigated in relation to his attitudes, practice, experience and education.

4.3. THE STATEMENT OF THE PROBLEM

The present study proposes to investigate the transformation of house design within the specific cultural setting of Palestine. Several factors collaborate to instigate change, e.g. political, economic, social. However, the main concern here is with the social dimension of the argument, in particular, the extent of contribution of users and local practising architects to this transformation.

4.3.1. The Research Problem

“ The problem is the axial centre around which the whole research effort turns” (Leedy, 1989:45).

This study looks at three generic types of houses which have evolved in Palestine. All three are distinctive types, with special features, and each in turn was dominant over specific chronological time period. The investigation will address and assess issues related to:

- The house**
- The user**
- The architect**

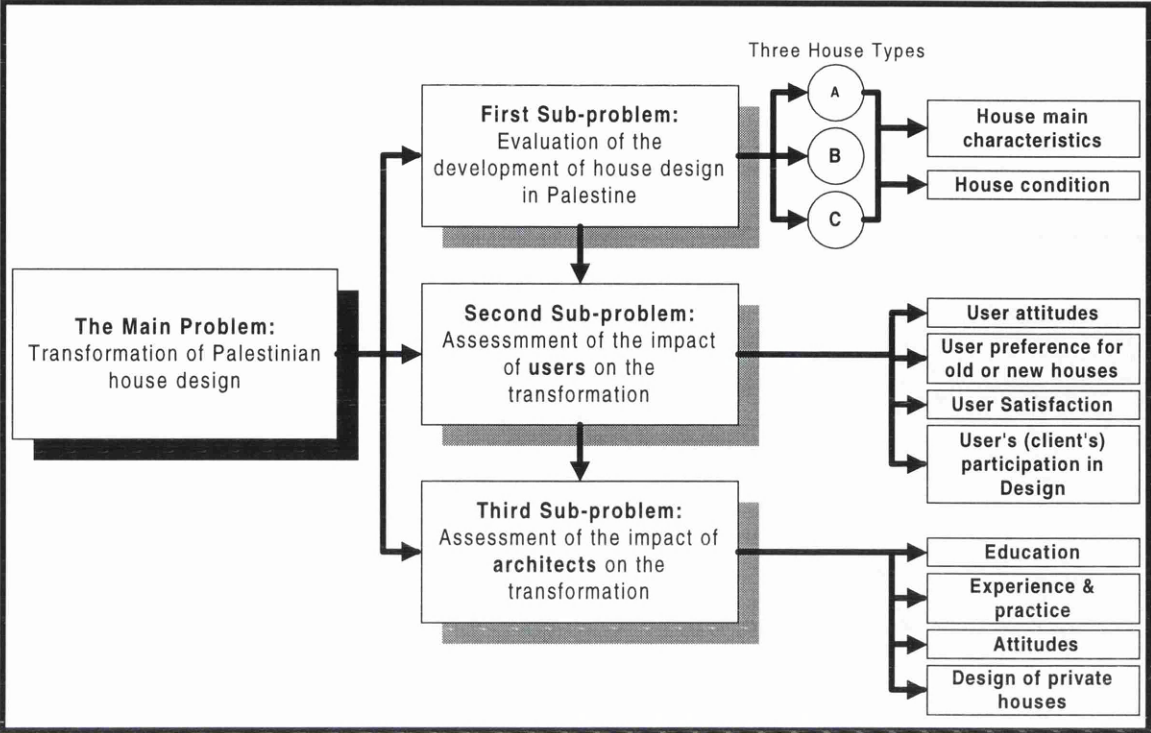
Basically, the house will be looked at as a physical entity that represents tangible and measurable evidence of change, while the user will be investigated to assess the extent of his/ her participation in private house design, and evaluate his/ her feelings towards his/ her house. In addition, the architect will be taken account of as designer of new houses and potential generator of change in house design.

To obtain a more global view of the problem, and make it more understandable and researchable, the main problem of the study is broken down into, and looked through, its sub- problems.

4.3.2. Research Sub- Problems

The research problem is broken up into smaller and more manageable sub-problems. Three research sub- problems are identified and formulated. While all sub- problem will constitute the main problem of the study, they should, however, be completely researchable units (Leedy, 1989:54). Figure 4.1 indicates a graphical representation of the research problem and its sub- problems.

Figure 4.1: The thesis problem and sub-problems.



I. The first sub- problem (design typology)

The first sub- problem traces the development of Palestinian house design. The three types of houses which have evolved in Palestine over time are investigated in terms of two criteria: firstly, their characteristics or layout, objectively assessed, and secondly, their condition, which involves a more subjective appraisal in terms of their environmental, social and functional aspects.

The three house typologies were identified and categorised according to their layout and date of construction:

1. **Type A house** represents the traditional Palestinian house, which dominated until the beginning of the 20th century (pre- 1918), and was built by local people and master builders. Courtyards are the main design elements that characterise the layouts of houses that belong to this type.
2. **Type B house** symbolises the colonial house in Palestine (1918- 1948), which evolved during the period of the British mandate, and was mainly built by master builders. Layouts of these houses are distinguished by central covered halls.

3. **Type C house** denotes the modern house in Palestine (1948- the time of the survey, 1996). This type of house started to develop during the 1950s. They are identified by their modern layouts which take different shapes and configurations, and were primarily designed by practising architects.

The main objective behind evaluating the development of Palestinian house design is to facilitate comparisons between different types of houses (*Chapter 5*), and consequently, to detect the transformation of house design during the three identified periods of history.

II. The second sub- problem (user- based evaluation)

The second sub- problem implies investigation of issues that evaluate the extent of contribution of Palestinian users to the change of house design in Palestine. Assessment will be carried out by exploring issues related to:

1. Users' attitudes towards their houses (*Chapter 6*).
2. Users' preference for old or new houses (*Chapter 9*).
3. Users' (clients') participation in the design of private houses (*Chapter 8*).
4. Users' overall satisfaction with their houses.

Investigation of attitudes, preferences, and satisfaction among users of the three types of houses (A, B, C) will shed light on the role Palestinian users could have played in provoking change in house design. Users' engagement in the design process of private houses will only involve sample users of newly- owned houses of type C. Examination aims at measuring the extent of users' participation in design and the extent to which users could influence the architect's design decisions.

III. The third sub- problem (architect- based evaluation)

The third sub- problem aims at evaluating the extent of contribution of practising architects to the transformation of Palestinian house design. Investigation will be carried out through focusing on:

1. The architect's background, his/ her education, experience, and practice (*Chapter 3*).
2. The architect's attitude towards traditional and new architecture (*Chapter 8*).
3. The architect's extent of involvement in the design of private houses (*Chapter 8*).

Several issues will be examined by this sub- problem:

- Does the educational background of the architect have an influence on his/ her attitude towards traditional and new architecture, hence on his/ her approach to house design?
- What is the general attitude among Palestinian architects towards traditional local architecture?
- To what extent can clients affect the architect's design decisions concerning private houses in Palestine?
- What is the extent of involvement of architects in design and construction of private houses in Palestine?

4.4. THE HYPOTHESIS

"A hypothesis is a guess about the nature of the relationship between two or more variables." (Mark, 1996:21)

To help formulate the research hypothesis, three propositions were identified:

1. **The first proposition:** Transformation of Palestinian house design is related only to changes in user requirements, attitudes and aspirations as a result of social change or change of lifestyle. Therefore users with their changing requirements according to their changing lifestyles, along with their positive attitudes towards, and preference for new houses, together with their aspirations for new up-to-date schemes, could have influenced the design of houses in Palestine and provoked change.

Assumptions:

- Users have more positive attitudes towards new houses than towards old ones.
- Occupants of new houses are likely to be more satisfied than users of old ones.
- Overall preference among users is more for new houses rather than old ones.
- Users in Palestine could participate to a large extent in the design of private houses.

2. **The second proposition:** Transformation in house design is only related to changes precipitated by the architect and not the user. Thus architects could have instigated change in house design by introducing new concepts, which are totally different from old or traditional ones, and thus, gradually generated change in Palestinian house design.

Assumptions:

- The educational background of Palestinian architects could affect their attitudes towards traditional and new architecture.
- The architect's attitude towards traditional architecture could affect his/her practice; in particular, the design of private houses.

- Clients could have no effect on the architect's design decisions, and therefore could not have affected his practice.

3. **The third proposition:** Transformation in house design is related to both the user and the architect. Therefore both co-operated to induce change. Users by their changing requirements attitudes and aspirations could have encouraged architects to implement new ideas and to introduce up to date concepts, thus gradually stimulating change. Or, it may be that architects in their attempts to bring about new distinguishable designs that contribute to their reputation, could have persuaded users to adopt new ideas and concepts, therefore generating change.

Assumptions:

- Positive attitudes of users and their preference to new house schemes could have encouraged architects to adopt these schemes.
- Users' high levels of satisfaction with new houses could have encouraged architects to endorse new concepts in house design.
- Clients could have effective participation in the design of private houses.
- Clients could have influenced the architects' design decisions in relation to private houses.

4.5. THE IMPORTANCE OF THE STUDY

The research accounts for architectural transformation of the built environment of Palestine. This in part is related to an extent to social changes manifested in alterations of users requirements, aspirations, and attitudes, as well as the introduction of architecture as a profession, and architects as practitioner designers.

Despite the existence of many studies, at Ph.D. level, dealing with Palestinian history, context, conservation ..etc., this research differs in terms of scope of investigation, methods of data analysis, variable measurement, and housing typology identification.

The importance of the study, however, can be discerned through its proposed issues, namely:

1. Assessment of Palestinian house design during different stages of history, which could indicate the future development that is likely to occur in house or housing architecture in Palestine.

2. Investigation of the architect's role in transformation of the Palestinian house. This could contribute to the development of architectural education within local universities, in that one could ensure that it truly prepares architects to appreciate their traditional built environment and contribute to the development of architectural concepts that satisfy Palestinian users. The importance of education as the basis for preparing architects who would respect traditional or regional concepts of architecture was stressed by Chadirji (1986), Haider (1986), and Cejka, (1982).
3. Investigation of the extent of users' contribution to transformation of house design aims to achieve understanding of some aspects of the building user-relationship. Thus, the research could provide some guidance for further research by highlighting the important role users could play in transforming their built environment and the extent to which people can contribute to the loss of local identities of human settlements.
4. The method of analysis adopted by the study will facilitate thorough and detailed examination of the data collected. The Statistical Package for Social Science (SPSS, PC+, Windows Base) will be used for data processing and analysis.

The value of the study also lies within the approach adopted by the research methodology which encompasses both objective and subjective measures. These will pave the way to an in-depth examination and analysis of the main characteristics of the Palestinian house during different periods of history, while the appraisal of different house typologies evolved during the three identified periods will help to detect transformation. Canvassing the opinion of users and architects will detect the extent of their contribution to change.

4.6. THE RESEARCH PROGRAM

The review of related literature clarified the study's main problem and sub-problems, and brought forward the research variables. The two case studies were designed to test different research variables in relation to the three main domains the study revolves around; the house, the user, and the architect.

Architectural surveys of old houses were conducted to supply documentation for examples of type A and B houses. Examples of new houses were obtained from the work of practising architects in Nablus.

Two case studies were carried out in Nablus using questionnaire survey; the first was conducted among users of sample houses that represent the three generic types, while the second involved practising architects. Then the data was processed and analysed using statistical methods and techniques provided by the SPSS (statistical Package for Social Sciences). The findings led to the drawing of conclusions and further recommendations.

4.7. THE RESEARCH METHODOLOGY

The research methods enable an investigator to focus attention on particulars of diverse phenomena until they began to be seen as a coherent whole (Zeisel, 1995:21).

To realise the main objectives of this study, the researcher had two goals:

1. To study the main characteristics of the Palestinian house which evolved during the three identified periods of history.
2. To furnish case studies that will serve to measure the extent of the contribution of users and practising architects to change in house design in Palestine.

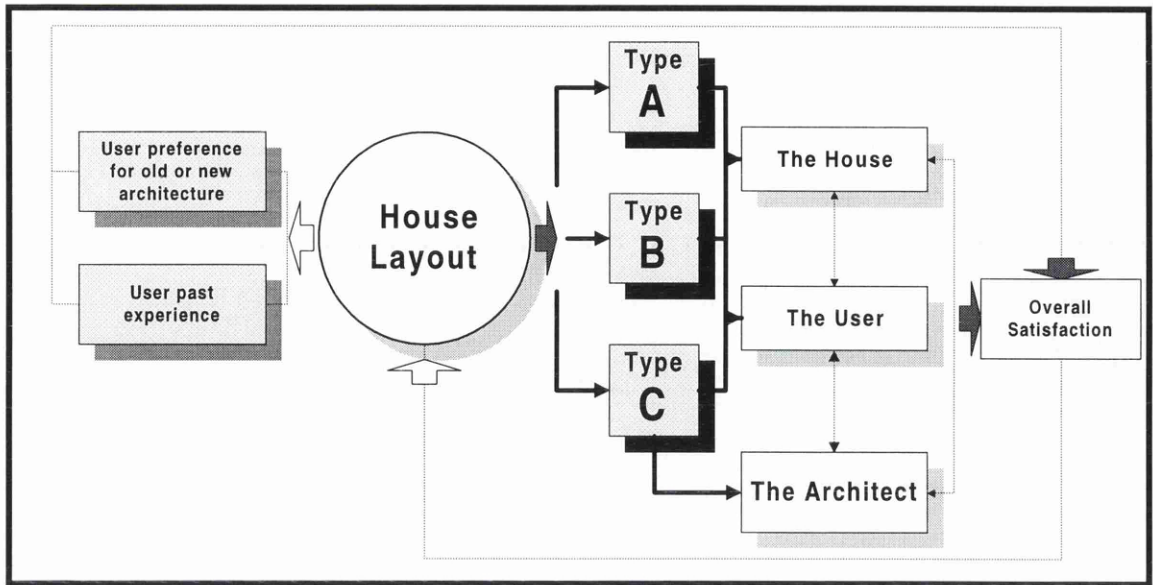
4.7.1. The Research Model

The research model comprises the three main elements of the study

- The house**
- The user**
- The architect**

Figure 4.2 illustrates the research model. It indicates the house layout and the categorisation of three sub- groups of house types (A, B, and C). Issues related to the house and the user will be investigated among the three house typologies, while those related to the architect will only be examined within the context of type C houses.

Figure 4.2: The research model



User's preference and his/ her past residential experience will be investigated as two potential factors that could influence the user's attitudes towards his/ her house, and therefore his/ her satisfaction with the house. The research model, however is based on two empirical case studies:

1. The house user
2. The architect

4.7.2. The Survey Method

Investigation of the problem will be carried out using an empirical analysis based on the two case studies of the research. However three phases of examination are involved in this research:

- **The first phase** is an appraisal of the three generic types of **houses**. The aim of this level is to identify the main characteristics of each of the three types of houses (A: the traditional house, B: the colonial house, and C: the new (modern) house in Palestine), (case study one).
- **The second phase** evaluates **users'** attitudes, and measures their preferences, and satisfaction. Investigation will involve users of houses that represent the three periods of architectural development in Palestine. On the other hand examination of the extent of user's participation in design of private houses will be investigated among users of new houses of type C only. (case study one).

- **The third phase** investigates the **architect's** attitudes towards traditional and new architecture, as well as the extent of his/ her involvement in design of private houses in Palestine. (case study one and two).

4.7.3. Selection of Samples

While a population is the whole group a study aims to generalise its results upon, a sample is a subset of that population (Salkind,1997:96). Basically, this study involves two representative samples: the sample users, and the sample architects.

I. The sample users

Sample users represent occupants of sample houses selected for the survey, with shortest period of residency of two to three years.

a) Sample size

The sample size (n) for which the sampling distribution of the mean can be considered approximately normal is $n \geq 30$ (Poglar, 1992:238). The size of sample users within each of the three groups of houses $n = (57-59) \geq 30$, therefore the standard normal curve can be used for the sampling distribution of the mean.

The sample users comprised 173 respondents distributed among the three groups, each represent one generic dwelling type in Palestine. 57 respondents were users of type A houses (traditional houses), 59 were users of type B houses (colonial houses), and 57 were users of type C houses (new houses).

b) Type of sample

The strategy used for sampling of users was probability sampling, in which non-systematic and random rules are adopted, therefore participants (users) were selected by chance. The type of probability sampling used is cluster sampling, which involves selection of units of individuals rather than the individuals themselves, thus three groups of houses were selected as units, and users among each group represented the sample. (Salkind,1997:97,102).

II. The sample architects

The sample architects represents practising architects of Nablus participated in the architect case study.

a) Size of sample

The sample architects consists of 17 practising architects in Nablus. They represented 10 out of 17 (58.8%) offices licensed for architectural practice in Nablus in 1996, and were either heads or employees in the selected offices.

b) Type of sample

Again the sample architects were selected according to probability sampling strategy. The type of sampling adopted was a systematic sampling, which is random sampling. The size of population is divided by the size of the sample. In this case 17 divided by 10= 2, thus all offices are listed and the every second office is selected. For a starting point, one office name is chosen randomly (by eyes closed pointing method) (Salkind,1997: 100-101).

4.8. THE RESEARCH CASE STUDIES

“ A case study is an empirical inquiry that investigates a contemporary phenomenon within its real- life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 1994:13)

The two research case studies were conducted in Nablus, one of the main Palestinian cities.

1. Case study one: The house user case study
2. Case study two: The architect's case study

The main objectives behind administering these case studies are:

- Case study one:**
- Appraisal of the Palestinian house during the three identified periods of history.
 - Evaluation of the extent to which users contributed to change of house design in Palestine.
 - Assessment of the extent of involvement of architects in design of private houses.

Case study two: ■ Evaluation of the extent of the architect's contribution to transformation of house design.

As a result this research will conduct two forms of measurements described as follows:

4.8.1. The First Case Study: The House User Case Study

The house user case study involves a questionnaire survey, which has been carried out to establish grounds for comparisons between the three types of houses identified by the study (A ,B ,C). The case study will also facilitate testing the three research propositions that relate transformation in Palestinian house design only to users, only to architects, or to the contribution of both (architects and users). The main themes covered by the house user questionnaire are:

- Themes related to the house

1. House profile
2. House condition
3. Design of private houses (type C houses only)

- Themes related to the user

1. User's attitudes
2. User's preference for old or new houses
3. User's overall satisfaction
4. User's (client's) participation in design of private houses (type C houses only)
5. User's satisfaction with the architect's work (type C houses only)

- Theme related to the architect

1. Architect's extent of involvement in design and construction of private houses (type C houses only)

The case study was carried out in December- January, 1996. Students from second, third and fourth year architecture courses at Al- Najah university assisted the researcher with the survey. They were acquainted with the questionnaire content, structure and objectives, and were prepared to offer help if needed by sample users. Also they were familiar with the three types of houses identified by the study.

A sample houses of 210 houses was selected, thus each house type was represented by 70 houses. Sample houses that represent the traditional houses of type A were selected

randomly from different quarters of the old city of Nablus. Type B and C houses which represent the colonial and the new house were located outside the old city and distributed in various new and older parts. Thus care was taken to select all the sample from different neighbourhoods of the city. Selection was made by the researcher; however consultation was needed if any of the students found that the example selected was inadmissible and had to be changed, for whatever reason.

Questionnaires were distributed among the sample houses and collected personally by students. Users of more than three years residency were asked to complete questionnaires (however two years were sufficient for occupants of new houses). As was mentioned earlier, guidance from students was offered to the respondents when needed. In fact in many cases students had to assist filling in the whole questionnaire, especially with elderly or illiterate people.

Students were directed not to call back for questionnaires more than twice. The response rate of the sample was 81-84%. A total number of 173 out of 210 questionnaires (82%) were completed; 57(81%) by type A house users, 59(84%) by type B users, and 57(81%) by type C users.

4.8.2. The Second Case Study: The Architect's Case Study

Mainly, this case study assists in the testing of the hypothesis of the study, which links transformation of Palestinian house design to the architect's contribution (proposition two) or to both the architect's as well as the user's contribution (proposition three).

A sample of practising architects in Nablus took part in the study, which was carried out by a questionnaire survey. The questionnaire investigates the following domains:

1. The architect's background
 - Education
 - Experience
 - Practice
2. The architect's attitude towards the traditional architecture of Palestine
3. The architect's experience in the design of private houses.
4. The architect's general attitude towards traditional and new architecture.

The architect case study was carried out in December 1996. The sample comprised 17 architects, who were the heads or employees of 10 architectural offices from the 17 registered by the Jordanian engineering association (Jerusalem centre) in 1996. A brief oral introduction to the questionnaire and its objectives was needed prior to the completion, and in most cases a brief discussion between the architect and the researcher took place after completing the questionnaire. Distribution and collection of questionnaire forms was done by the researcher. Full co-operation was offered by all architects who participated, and the response rate was 100%.

4.9. THE RESEARCH DATA

The research data comprised the relevant information needed for testing the three propositions formulated by the study.

4.9.1. Type of Research Data

The data needed to administer the research are of two types

- 1- Primary data
- 2- Secondary data

I. The primary data

Three areas of concern are related to the primary data

1. **Sample houses** which represent the three periods of house design development in Palestine, and were used to conduct the questionnaire survey. Data needed was:

- a) Information related to the house; general information, main characteristics, physical condition.
- b) Related documents for example houses including plans, elevations, and sections.
- c) Relevant literature concerning the three house types.

2. **Sample users** who are occupants of sample houses of each of the three types used to conduct the questionnaire survey. The data was collected on:

- a) General information; the size of the family, type of ownership, and users' past residential experience.
- b) Convenience in using the house.
- c) Users' attitudes, preferences, and overall satisfaction.
- d) Extent of users' participation in design of private houses.

3. **Practising architects** of Nablus participated in the questionnaire survey. Data was collected on:
 - a) Architect's background; education, practice and experience.
 - b) Architect's attitudes towards traditional architecture.
 - c) Architect's extent of involvement in design of private houses.

II. The secondary data

Books, articles, and relevant documents used for data collection

4.9.2. Methods of Data Collection

Five methods of data collection were adopted in this study:

1. Administering questionnaire survey
2. Conducting architectural documentation survey.
3. Reviewing the literature relative to the study
4. Discussions with house users and practising architects
5. Personal observations

4.9.3. Methods of Scaling

Mainly, the aim of measuring procedures adopted is to establish qualitative data that could be measured in quantitative terms. Different research variables were measured by the following scales:

1. The Likert scale, an arbitrary scale, which enables attitude measurement on a scale that runs from extremely negative to extremely positive. It provides alternatives on a five-point continuum: Strongly disagree=1, disagree=2, neutral=3, agree=4, and strongly agree=5 (Nachmias,1976:114). The Likert scale is used by this study for measurements of user's attitudes, preferences, satisfaction, and extent of participation in design of private houses.
2. Multiple choice questions are also used, in which a set of alternatives was given. One of the options must be the correct answer (Salkind, 1997: 138-139).
3. A two alternatives scale (yes or no scale) was also used for measuring variables that measure the extent of architect's contribution to change.

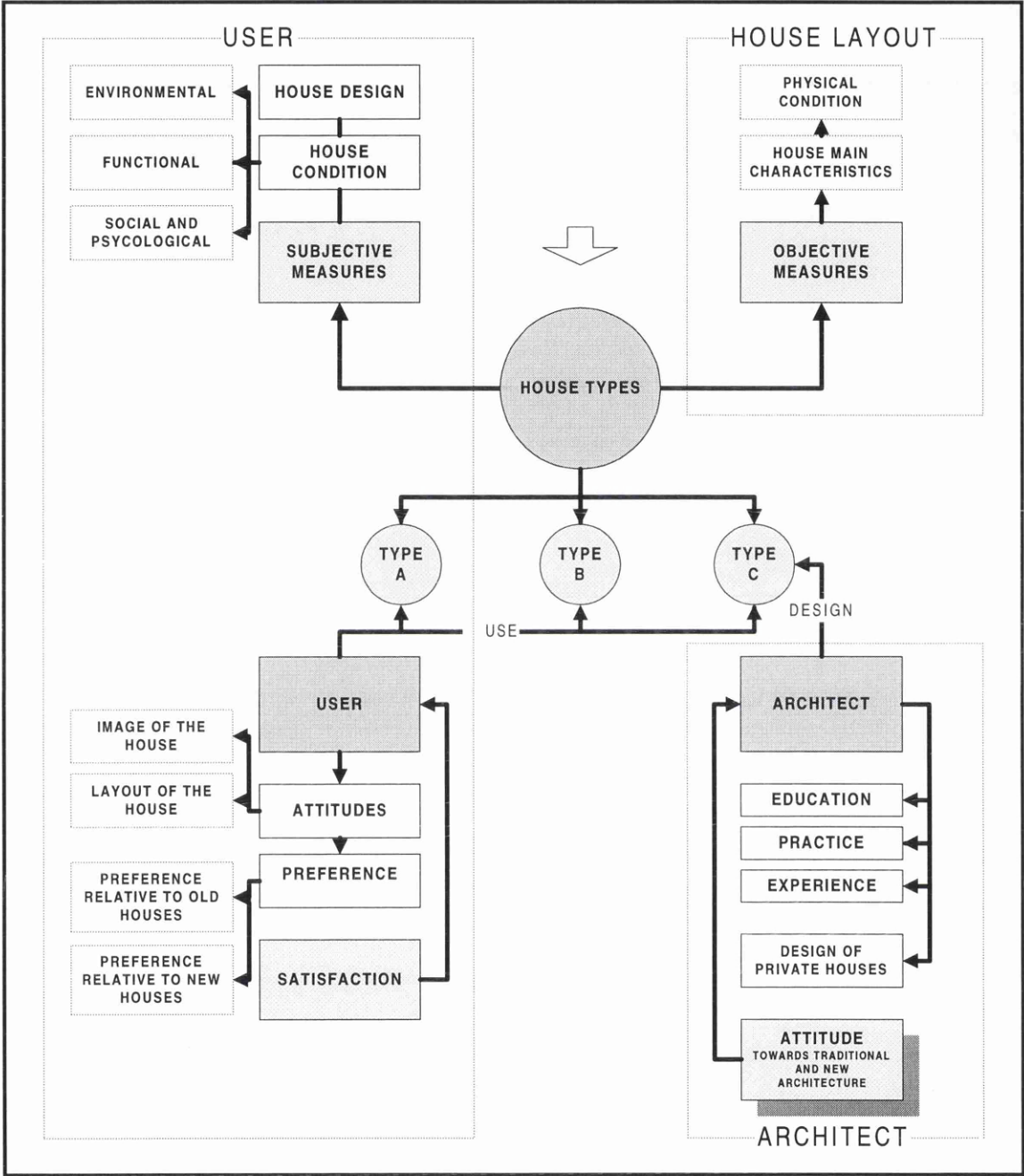
4.9.4. The Research Variables

“ A variable is a concept that varies. It can take one two or more values” (Mark, 1996:15)

This study revolves around three main variables namely; the **house**, the **user**, and the

architect. Therefore the research variables entail domains related to the three main elements. Figure 4.3 indicates the research variables and the relationship between them.

Figure 4.3.: A diagram showing the research variables and their relationships



Type A house (pre- 1918) : represents traditional courtyard houses in Palestine
Type B house (1918-1948) : represents colonial houses in Palestine
Type C house (1948-present) : represents new houses in Palestine

The following tables classify the research variables according to the house, the user, and the architect in each of the two case studies.

Table 4.1 describes the variables that are related to the house within the house user case study. The house type, which classifies the sample houses of the study into three groups, will be considered as an independent variable (IV), while other variables will be considered as dependent variables (DV) when measured next to the house type. Other wise dependent variables might be considered as independent variables in this study and visa versa (Clegg, 1997:58).

Table 4.1: Variables that relate to the house in the house user case study

The Independent Variables (IV)	The Dependent Variables (DV)
The house (House type)	<div><div>-Layout</div><div><div>-Physical condition</div><div><div>■ Construction materials</div><div>■ Physical condition of the house</div></div><div><div>-Environmental condition</div><div><div>■ Quantity of internal daylight conditions</div><div>■ Lack of sunshine inside</div><div>■ Discomfort caused by high humidity levels</div><div>■ Thermal condition in summer</div><div>■ Poor natural ventilation</div></div><div><div>-Social and psychological aspects</div><div><div>■ Lack of interesting views (greenery, landscape, etc.)</div><div>■ Lack of privacy</div></div><div><div>-Functional aspects</div><div><div>■ Small house size in relation to family size</div><div>■ Mismatched bathroom location</div><div>■ Small kitchen size</div><div>■ The frequent need for maintenance</div></div></div></div></div></div></div>

Table 4.2 identifies the variables that relate to the user in the house user case study. They involve users’ attitudes and preference as two independent variables, while dependent variables are listed as sub- variables or indicators used to assess the independent variables.

Table 4.3 describes different variables used in the house user case study to evaluate the extent of the architect’s involvement in the design of private houses.

Table 4.2: Variables that concern the user within the house user case study.

The Independent Variables (IV)		The Dependent Variables	
The user	User's attitudes Towards his/ her house	-The image of the house <ul style="list-style-type: none">■ The external image of the house■ The internal image of the house■ The distinctiveness of the house■ The house as an identity expression -The layout of his / her house <ul style="list-style-type: none">■ Circulation space■ Spaciousness of rooms■ Arrangement of rooms■ Provision of a reception room■ Importance of the reception room	
	User's preference for old or new houses	-User's preference relative to old houses <ul style="list-style-type: none">■ Conserved old houses■ Maintenance of old houses■ Space arrangements of old houses■ General preference for old houses -User preference relative to new houses <ul style="list-style-type: none">■ Media influence on users' preference■ New houses and their association with modernity■ New houses as signs of users' high social status	

Table 4.3: Variables that relate to the architect within the house user case study.

The Independent Variables (IV)	The Dependent Variables (DV)
Architect	-Design of private houses <ul style="list-style-type: none">-The design stage<ul style="list-style-type: none">■ Making changes during the design stage■ Spending enough time with client during the design stage■ The external appearance of the house■ The internal planning of the house-Construction stage<ul style="list-style-type: none">■ Choice of building materials■ Supervising construction stages■ Implementation cost of the architect's suggestions and ideas-Occupancy stage<ul style="list-style-type: none">■ Space utilisation of the house Clients overall satisfaction with the architect's work.

Table 4.4 defines different variables linked with the architect in the architect case study and used by the architect questionnaire.

Table 4.4: Variables that relate to the architect within the architect's case study

The Independent Variables (IV)	The Dependent Variables (DV)
The architect	<div><div>-Education</div><div>-Practice</div><div>-Experience</div><div><div>-Attitude towards traditional Palestinian architecture</div><div>■ Familiarity with traditional Palestinian architecture</div><div>■ The extent to which the architect’s familiarity with traditional architecture affects his designs</div><div>■ Borrowing elements of traditional Palestinian architecture</div><div>■ Advising clients of traditional concepts of design</div><div>■ The viability of the introverted courtyard concept in house design today</div><div>■ The adoption of traditional concepts of design</div></div><div><div>-Old houses of Nablus</div><div>■ Attitudes towards old houses of Nablus</div><div>■ Conservation of old houses of Nablus</div></div><div><div>-Private house design</div><div>■ The extent of clients’ influence on the architect’s design decisions</div><div>■ Important functions within private houses according to architects and clients</div><div>■ Aspects of concern for clients in house design</div><div>■ Use of new building materials</div></div><div><div>-The architect’s general attitude towards old or new architecture</div></div></div>

4.9.5. The Questionnaire

A questionnaire is an important instrument of research. It is a tool for data collection, and its function is measurement. The term questionnaire is usually used to describe a set of questions of various types, for example open and closed- ended and multiple choice (Oppenheim, 1992:100- 103). The researcher compares answers to the same set of questions asked to a number of people, thus highlighting similarities and differences

among groups (Zeisel, 1995:157). The questionnaire could be postal, self, or group administered.

The technique used by this study is a self- administered questionnaire briefly presented and explained to the respondents by an interviewer. This method of data collection has several advantages such as:

- It ensures a high response rate: Questionnaires are handed to the respondents and collected back after completion.
- It guarantees accurate sampling: Questionnaires are completed by the intended respondent.
- It yields minimum interviewer bias: Interviewer can provide the necessary explanations but not the interpretation of the questions (Oppenheim, 1992:103).

The two research case studies of this investigation were administered by conducting two questionnaire surveys. The two questionnaires used are; the house user, and the architect questionnaires. The design of both these was based on personal observations, interviews with users of the three house typologies, and practising architects, in addition to two pilot studies carried out on users and architects. Design and structure of the questionnaires are discussed in the next section.

I. The questionnaire design

In designing of the two questionnaires, the socio- cultural context of Palestine was taken into consideration. Content and direction of questions were intended to ensure that the instrument and the data gathered were deemed to be appropriate for evaluation of the research propositions, and its variables.

a) The house user questionnaire

Both questionnaires were developed to produce the predicted results. The house user questionnaire aimed to serve two main purposes, firstly, to obtain the data required for evaluation of the house characteristics and condition. Secondly, to gather data needed to assess users' attitudes, preferences, satisfaction with the dwelling, as well as their general feelings and views towards certain aspects of house design. Therefore, the main objective of the questionnaire is to gather enough information that would enable the researcher to measure the extent of users' contribution to the change in house design in

Palestine, as well as accumulation of information for the purpose of comparisons between the three types of houses under investigation.

To ensure full understanding of the questionnaire by occupants of sample houses, the wording of the questionnaire was carefully formulated to be easily apprehended. The original questionnaire forms distributed were written in Arabic; for an English translated version please refer to Appendix no 1.

A pilot study was carried out, and, as a result some of the questions were avoided in the final questionnaire, namely, those related to user's occupation and income. The period of users' residency was taken into consideration (as mentioned earlier), thus users of old houses with more than three years, and new houses' users of more than two years of residency were allowed to participate in the questionnaire.

b) The architect questionnaire

The aim of the architect's questionnaire is to measure the extent of architects contribution to change in house design in Palestine, thus different questions aim to achieve this purpose. Again the original questionnaire was written in Arabic, for an English translated version refer to Appendix no 2.

The architect questionnaire was intended for practising architects of Nablus, therefore it was important to keep in mind that the wording of the questionnaire should be directed to professionals. Also the questionnaire was designed to be brief and quickly answered in order not to take up too much of the architects' valuable time.

II. The questionnaire structure

a) Questionnaire 1 : The House User Questionnaire

The questionnaire design was structured over six parts. It was expected to be filled by users of sample houses, male or female.

1. Part one: house profile

The first part entails assemblage of general information about the house: the year of construction, its location, and the type of ownership.

Also this part accumulates data related to the main characteristics of the house: number of stories the house consists of, and the house layout; the total house floor area, number of rooms, different functions of the house, and its plan configuration.

Moreover, part one gathers information about the family size and the physical condition of the house, besides the building materials used for constructing the house.

Thus, part one will be concerned with collection of descriptive information about sample houses involved in the study.

2. Part two: user attitudes towards house image and layout

Part two involves evaluation of users' attitudes towards their houses. It consists of two parts:

- The image of the house, which is measured by different variables, mainly the external and the internal image of the house, the distinctiveness of the house, and the house as an expression of the user's identity.
- The layout of the house, which is evaluated by several variables, particularly the circulation, ease of movement between rooms, the spaciousness and arrangement of rooms, as well as the provision and importance of the reception room.

3. Part three: The house condition (Environmental, Social and Psychological, and Functional)

This part is concerned with the environmental and functional conditions, in addition to social and psychological requirements of the house. It evaluates the feelings of users towards their houses in terms of different variables used.

Environmental condition among sample houses is investigated in terms of: insufficient natural light, lack of sunshine inside, discomfort caused by high humidity levels, excessive heat in summer, passive solar design, and poor natural ventilation.

Privacy in relation to the surroundings is examined as a social aspect of the house. Also, whether the house overlooks interesting views is investigated as a psychological aspect.

House condition is further detected in terms of functional aspects: house size in relation to family size, mismatch of bathroom location and kitchen size, in addition to the need for frequent maintenance.

Again, this part presents users' assessment of their houses in terms of different variables identified by the section. Information accumulated in relation to each house type will pave the way for comparisons and appraisals used to assess the research propositions.

4. Part four: User's preference for old or new houses

This part measures users' preference for old or new houses, therefore it attempts to further investigate the extent of users' contribution to change in house design in Palestine. It consists of two sections: the first evaluates users' preference relative to old houses and detects some problems that make people prefer new houses to old ones. The second assesses users' preference relative to new houses and investigates reasons behind this.

5. Part five: Overall assessment of the house

Part five presents an assessment of user's overall attitude towards his/ her house, as well as towards old and new houses. It sums up the user's feelings towards his/ her house and links that with his/ her past residential experience, which is examined by detecting place of previous residency, and reasons for changing residence.

The main objective of this part is to evaluate user's overall attitude and investigate that as a background which could influence users' preference, and attitudes towards old and new houses.

6. Part six: The client as a participatory element in the design process of private houses

This part is intended to gather information related to design of private new houses in Palestine, therefore it is intended for owners of type C houses designed by architects. It aims at measuring the extent of users' participation in the design of their houses, as well as the extent of the architect's involvement in design and construction of private houses. Examination will involve the design, construction, and occupancy stages of the house. Its main objective is twofold; thus this part compiles information related both to the user's and architect's role in generating change in house design in Palestine.

2. Questionnaire 2: The architect questionnaire

The architect questionnaire comprised five sections, which as a whole aims to investigate the extent of architects' contribution to the transformation of Palestinian house design.

1. Part one: General information

The first part accumulates information about the architect, his/ her education; year and place of graduation. It also investigates the architect's practice: the year of establishment of his/ her office, and the number of architects and draftsmen employed. Furthermore, the part comprises information about the architect's experience; the length of period worked, and type of practice he/ she operates.

2. Part two: The architect's attitudes towards traditional architecture of Palestine

This part is intended to evaluate the architect's attitudes towards traditional Palestinian architecture, and thus it attempts to shed some light on the influence of the architect's attitudes on his designs.

It investigates the extent to which the architect is familiar with traditional architecture of Palestine, and the extent to which this familiarity affects his work. It examines whether the architect would encourage borrowing elements from traditional architecture, and whether he/ she would advise his/ her clients of traditional design concepts.

It also questions the architect's attitude towards the adoption of traditional concepts of house design and the difficulty in doing so.

3. Part three: Houses of Nablus (Type A and B)

This part is concerned with the old houses of Nablus of both types A and B; it evaluates the architect's attitudes towards these two types of houses. Also it examines the architect's experience in conservation of old houses.

4. Part four: The design of private houses

This part is intended to assist measuring the extent of users' participation in design of private houses. It detects clients' influence on the architect's design decisions. It also

investigates the most important space in the house which is usually given particular attention by the architect as well as his clients.

Examination also entails the main aspects of concern in design of private houses, in terms of layout and exterior appearance, as maintained by the majority of the architect's clients. In addition this part investigates the use of new building materials.

5. Part five: The architect's general attitude

Part five is designed to measure the architect's overall attitude towards old and new architecture. It investigates the type of architecture the architect visualises for the future of Nablus (the city where the sample architects live and operate their practice). Therefore it sums up the architect's feelings towards both traditional and new architecture.

4.10. PHYSICAL MEASUREMENTS

Actual measurement of some buildings was needed to carry out certain investigations of variables related to house layout, and use of space. Two architectural surveys were conducted to document examples of type A and B houses. The first survey was carried out in February 1995 by fourth year students of Al- Najah university in Nablus (class 1996). Documentation was for examples of type A houses (traditional courtyard houses of the old city of Nablus).

The second survey was conducted in April 1996 by the researcher with participation of fourth year students from Al- Najah university (class 1997). Examples of type B houses, which represent the colonial house in Palestine, selected from different locations in Nablus, were measured and documented.

4.11. STATISTICAL ANALYSIS

Various statistical techniques were used for analysing the main body of research data to examine the propositions raised by the study.

Descriptive as well as inferential statistics were adopted. Descriptive statistical technique used included measures of central tendency; the mean, the median, and the

mode, as well as measures of dispersion, frequencies and percentiles (for definitions of terms refer to chapter five, 5.2).

Inferential statistics were employed to test reliability when using a sample to draw conclusions about the population. Two nonparametric statistical tests for k sample were used: the Kruskal-Wallis, and the Median tests. The main objective behind using these tests is to examine the null hypothesis, against different variables, that no differences exist between the three groups representing the three generic house types used in the study.

The *Chi*-square test was used, when applicable as well as different correlation tests to detect interrelationships between certain pairs of significantly related variables. Two correlation tests for ordinal data, the Spearman, and Kendall tests, were adopted (for more information about the two tests refer to chapter six, 6.2.3).

4.12. ORGANISATION OF THE FINDINGS

The next five chapters present the empirical analysis of the study; chapter five, six, seven, part of section two of chapter eight, and chapter nine put forward the data analysis and findings of the house user questionnaire, while chapter eight accounts for data analysis and finding presentation of the architect questionnaire.

Chapter five introduces descriptive analysis of the house profile, and presents objective measures for evaluating and comparing the three groups of sample houses.

Inferential along with descriptive statistics were adopted by chapters six to nine; chapter six puts forward users' attitudes, while the house condition is accounted for by chapter seven. Chapter eight analyses the design process of private houses, while chapter nine involves investigation of users' preference.

According to findings yielded by the research, chapter ten reports the conclusions, and makes recommendations, it also highlight areas of further research of the study.

4.13. CONCLUSIONS

This thesis investigates the relationship between the transformation of the Palestinian house and the factors/ variables (user, architect, or both) that have affected this process.

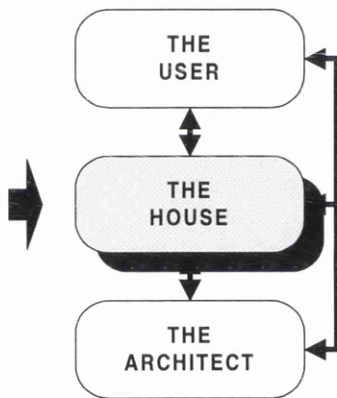
This chapter sets forth the methodology adopted to develop a frame work for approaching the research problem. It links theoretical and empirical analysis of the study by proposing the research model which will establish bases for investigation. Relevant work was reviewed and its shortcomings were highlighted. Research problems and sub- problems were identified, a hypothesis was proposed, and a review of research methodology was presented.

Basically the study will be concerned with unveiling issues related to three main domains; the house, the architect, and the user. Links found between these issues evident from the interrelationships between different variables will help to examine different propositions of the study.

The research methodology chapter mainly facilitates the interpretation of the whole process of research adopted by the study. Further explanation of certain aspects specific to data analysis carried out in each chapter will be illustrated within the context of that specific chapter.

4.14. REFERENCES

- A'AMIRY, S. (1987) *Space, kinship and gender: the social dimension of peasant architecture in Palestine*, Unpublished Ph.D. Thesis, Edinburgh university.
- AL-KHATIB, A. (1985): *Housing in Nablus: socio- economic characteristics and housing satisfaction of three Palestinian sub-groups*. Unpublished Ph.D. thesis, University of New- York.
- BULOS, M., TEYMUR, N. (1993): *Housing: Design, Research, Education*, Ashgate Publishing Limited, England.
- CEJKA, J. (1982): "Regional Traditions and its Application in Contemporary Architecture", *The Jordanian Engineer*, Amman, No.27, p.90-100.
- CHADIRJIL, R. (1986): " Architectural Education in Iraq: A Case Study", in A. Even (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.112-122.
- CLEGG, F. (1997): *Simple Statistics: A Course Book for the Social Sciences*, University press, Cambridge, United Kingdom.
- HAIDER, S.G. (1986): "Education Towards an Architecture of Islam", in A. Evin (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.43-48.
- LEEDY, P.D (1989): *Practical Research: Planning and Design*, fourth edition, Macmillan Publishing Company, New York.
- MARK, R. (1996): *Research Made Simple: A Handbook for Social Workers*, SAGE Publications, Thousand Oaks, London, New Delhi. Ch.2,6.
- NACHMIAS, D., NACHMIAS, C. (1976): *Research Methods in the Social Sciences*, Edward Arnold, UK.
- OPPENHEIME, A. N. (1992): *Questionnaire Design, Interviewing and Attitude Measurement*, New ed., Printer Publisher Ltd. London.
- POLGAR, S. & THOMAN, S.A. (1992): *Introduction to Research in the Health Sciences*, second edition, Churchill Livingstone
- QAMHIEH, K. (1992): *Saving the Old Town of Nablus, A Conservation Study*, Unpublished Ph.D. Thesis, Mackintosh school of architecture, University of Glasgow.
- SALKIND, N.J. (1997): *Exploring Research*, third edition, Prentice Hall, USA.
- SENAN, Z. (1993): *Political Impacts on the Built Environment: Colonisation and the development of place identity. The case study of rural west Bank (Palestine)*, Unpublished Ph.D. Thesis, Newcastle upon Tyne.
- YIN, R.K. (1994): *Case Study Research: design and Methods*, second edition, SAGE publications, UK, India.
- YOUSOF, M. (1996) *Conservation of cultural heritage in the 'West-bank' under occupation. The case study of the old city of Nablus*. Unpublished Ph.D. Thesis, University of York.
- ZEISEL, J. (1995): *Inquiry by Design: Tools for Environmental- Behaviour Research*, Cambridge University Press, USA, Ch.2, 10.



5. Chapter Five

House Profile: Descriptive Statistics

The Analysis of Part One of the House
User Questionnaire

5.1. INTRODUCTION

This chapter deals only with the data analysis of Part One of the house user's questionnaire, The House Profile. The survey was carried out in Nablus on the sample houses that represent the three house types (A, B, and C) identified earlier according to particular design characteristics developed during certain periods of time.

PART ONE (A): General Information: It gives a profile for the house by defining the year of construction, location, ownership, house characteristics, and family size.

PART ONE (B): Physical Condition: It presents the house in terms of its physical condition, and building materials.

The main objective of analysing the data drawn from Part One is to determine the main characteristics of each house type and to investigate the change which occurred in house design from one historical period to another. Examining the particular characteristics of type C houses (which represent the modern house designed by architects in relation to the other two types A, and B, built by users and master builders), could shed the light on the role the architect could have played in contributing to change in house design in Palestine.

In analysing the data, the house type will be considered as an independent variable (IV) according to which other dependent variables (DVs) will be measured. For data processing and analysis the SPSS (Statistical Package for Social Science (SPSS), PC⁺, Windows Base) is used.

5.2. THE RESULTS OF THE HOUSE USER QUESTIONNAIRE: DESCRIPTIVE STATISTICS

Descriptive statistics of data processed from Part One (A+B) are analysed and discussed in this chapter. However the results of this part will furnish a basis for further investigation of the transformation in Palestinian house design during the specified periods of time.

In order to give a general idea of the nature of the work that will be carried out throughout the chapter, descriptive statistics are briefly discussed.

“Descriptive statistics consist of methods for organising and summarising information” (Weiss, 1995: 4). It includes the calculation of different descriptive measures such as averages, and percentiles, in addition to construction of graphs, charts and tables.

The descriptive measures used in this chapter are:

1. Measures of central tendency; the mean, mode, and median are used. The mean is defined as the sum of the data divided by the number of cases, while the mode is the value that occurs more frequently in a set of data, or the most popular value in a set of scores (Clegg, 1997). The median is “ the value of the variable which divides the distribution so that exactly half of the distribution has the same or larger values and exactly half has the same or lower values” (Caswell, 1995:93).
2. Measures of dispersion; the spread of distribution recognised as the minimum and the maximum values and the range are used. The range is defined as the difference between the maximum and the minimum values among a set of data. $\text{Range} = \text{Max} - \text{Min}$ (Clegg, 1997).
3. Frequency and percentage are also used. “The number of pieces of data that fall into a particular class is called the frequency of that class” (Weiss, 1995:51).

5.2.1. PART ONE (A): General Information

Part one (A) of the house user questionnaire gives a general description of the house, which involves general information and main characteristics. Consequently, distinctive features of each house type will be identified, and the development of house design will be traced by comparing the three types of houses (A, B, and C).

I. Year of construction

A subdivision is proposed for the purpose of the study according to the year in which houses of the sample were constructed. Three types of houses are identified as follows:

- **Type (A), the traditional house (courtyard house):** It is represented by a sample of houses built in Nablus before the year 1918. Houses built during this period belong to Mamluk (1244-1517) and Ottoman (1517-1918) architecture. They are mainly introverted, courtyard houses, which were the approved type for domestic architecture

up to the beginning of the twentieth century (Qamhieh, 1992). In the old city of Nablus these houses were part of the dense cellular- like urban structure.

- **Type (B), the colonial house (covered central-hall house):** It is represented by a sample of Nablus houses built by master builders during the period of the British mandate in Palestine (1918- 1948). Type B houses symbolise the foreign influence on traditional Palestinian architecture, by the extroverted concept of architecture they introduced and the wealth of outside decoration they displayed in contrast with the introverted traditional houses with plain street elevations.

- **Type (C), the modern house:** It is represented by a sample of new houses designed during the past 50 years, from 1948 to the date of the study (1996). These houses demonstrate the modern approach to house architecture in Nablus. They were designed by architects and therefore they indicate the influence exerted by professional architects on house design in Palestine. Houses before the emergence of type C were mainly constructed by master builders.

Table 5.1, and figure 5.1 classify the sample houses according to the year of construction. It should be noted that the date of construction before the twentieth century is sometimes an estimation by the house user.

Table 5.1 : Number and percentage of sample houses by the year of construction.

	HOUSE TYPE					
	A- Pre 1918		B- 1918-1948		C- 1948-Present	
	YEAR OF CONSTRUCTION		YEAR OF CONSTRUCTION		YEAR OF CONSTRUCTION	
	Count	%	Count	%	Count	%
1400-1499	3	5.3%				
1500-1599	8	14.0%				
1600-1699	8	14.0%				
1700-1799	13	22.8%				
1800-1899	24	42.1%				
1900-1918	1	1.8%				
1919-1929			13	22.0%		
1930-1939			25	42.4%		
1940-1948			21	35.6%		
1949-1959					2	3.5%
1960-1969					4	7.0%
1970-1979					14	24.6%
1980-1989					20	35.1%
1990-1996					17	29.8%

Figure 5.1: A bar diagram showing the distribution of sample houses by the year of construction.

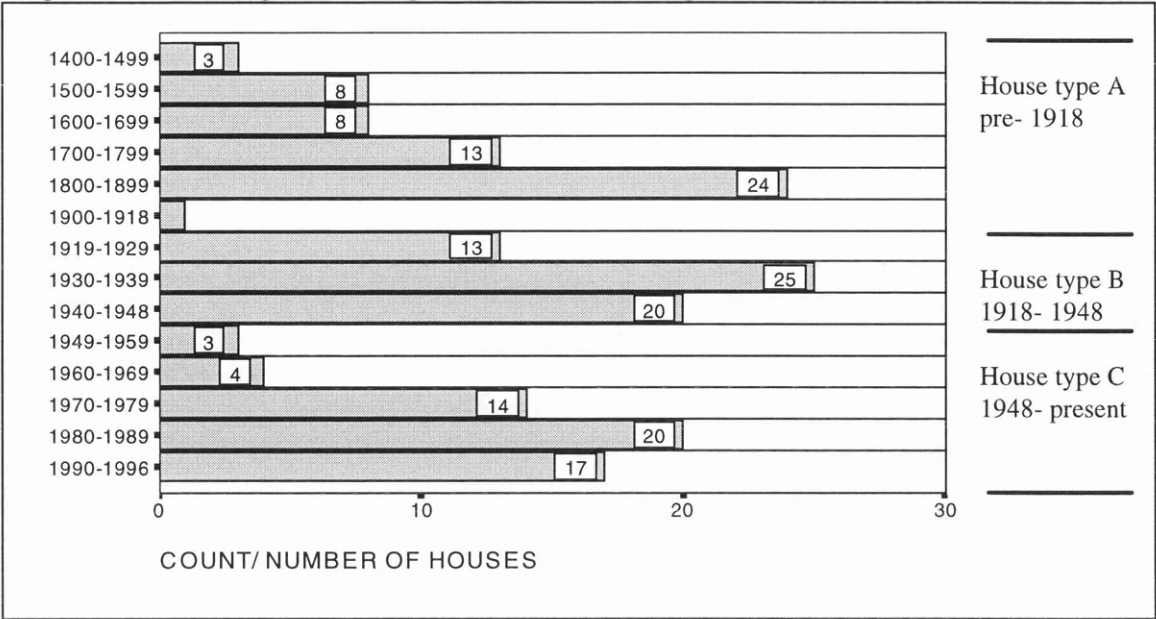


Table 5.1 and figure 5.1 indicate the distribution of sample houses used in the study. Among type A, most of the houses 24 (42.1%) were constructed during the 19th century, while among the type B, most of the sample houses were built during the thirties and forties, 25 houses (42.4%) and 21 houses (35.6%) respectively. The sample houses which represents type C consists of 20 houses (35%) built in the eighties, 17 houses (29.8%) built in the nineties, 14 houses (24.6%) built in the seventies, and 2 houses (7%) built in the sixties.

It could be concluded from the figure that the three periods of history represented by the three house types were separated by stages characterised by low level of house construction, for example 1900- 1918, and 1949- 1959. This could be due to the unstable political situation during these periods of time. The first period was during the end of Ottoman rule in Palestine and the time of the First World War (1914-1919), and the second was after the end of the British mandate (1948), the establishment of a Jewish state on part of the Palestinian land (1948), and the annexation of the West Bank with Jordan (1950).

II. House location

Three types of houses were identified according to the date of construction. Location of the house was to a certain extent determined by the date of construction:

Type A houses built before 1918 are located within the boundaries of the old city of Nablus, which now is considered the historic core of the city. Old Nablus consists of dense and compact construction, which form its urban fabric. Houses built around the boundaries of the city form the structure for a city wall, with nine gates opening into main streets from various directions (Conder & Kitchener, 1882, quoted in Yousof, 1996).

Type B houses in Nablus were built during the colonial period in Palestine 1918- 1948. They are located within the boundaries of the city's first expansions. However, during the mandate period Nablus expanded in different directions beyond the boundaries of the old city (Khayyat, 1985, quoted in Qamhieh, 1992), and eventually houses started to be constructed outside the old core of the city. They were of the detached villa type.

Type C houses, which were built during the period 1948- 1996, are situated within the new neighbourhoods of the city within the boundaries of the new expansions. Nablus was expanded for the first time in 1963, then in 1983, and lastly between 1983 and 1985 (Benvesnisti & Khayat, 1988, quoted in Qamhieh 1992). Type C houses represent the modern house architecture in Nablus, where each house is built on a private piece of land.

III. House ownership

For the purpose of the study two categories of ownership are identified: owned and rented. Data analysis of house ownership is discussed and a comparison between the two categories according to house type is conducted in terms of number, percentage, and total floor area of houses. The main objective is to find indications as to whether people would like to live in their owned old or new houses, and if they would lease their old or new houses. This might give suggestions to preference of old or new houses which will be investigated further in chapter nine.

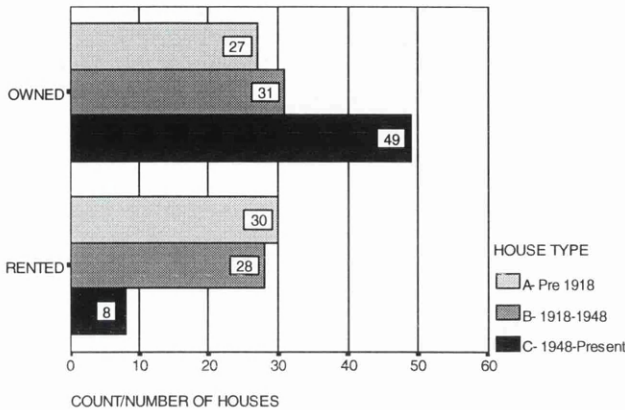
Table 5.2 lists the count and percentage of owned and rented houses among each of the three types of houses. Figure 5.2 shows the distribution of owned and rented houses in each of the three house types. The horizontal axis represents the number of houses, while the vertical axis represents the two categories of ownership.

Table 5.2: Number and percentage of owned and rented houses by the house type.

	HOUSE TYPE					
	A- Pre 1918		B- 1918-1948		C- 1948-Present	
	OWNERSHIP		OWNERSHIP		OWNERSHIP	
	Count	%	Count	%	Count	%
OWNED	27	47.4%	31	52.5%	49	86.0%
RENT	30	52.6%	28	47.5%	8	14.0%

Figure 5.2 and table 5.2 indicate that among type A houses, 27 (47.4%) houses are owned in comparison to 30 (52.6%) rented. While in type B, 31 (52.5%) houses are owned compared to 28 (47.5%) rented. On the other hand, the figure shows that a considerable difference existed between owned and rented houses in type C, the new houses. 49 (86%) are owned compared to 8 (14%) rented.

Figure 5.2.: Bar diagram of the distribution of owned and rented houses by the house type.



The ratio of owned to rented houses in type A is 27: 30 equals 0.9, while in type B it is 31: 28 equals 1.1. A slight increase in owned houses was determined in B type houses. In type C, however the ratio is 49: 8 which equals 6.1. A possible explanation could be that people tend to lease their old houses, while building new houses for their own use, in this case new houses are associated with high social status. This aspect will be further investigated in chapter nine.

Figure 5.3 gives a graphical representation of the percentage of owned to rented houses, by the house type, to the nearest 5%.

Figure 5.3: The percentage of owned (shaded squares) to rented houses (white squares) by the house type to the nearest 5%.

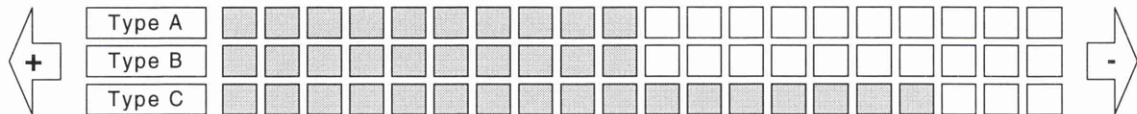
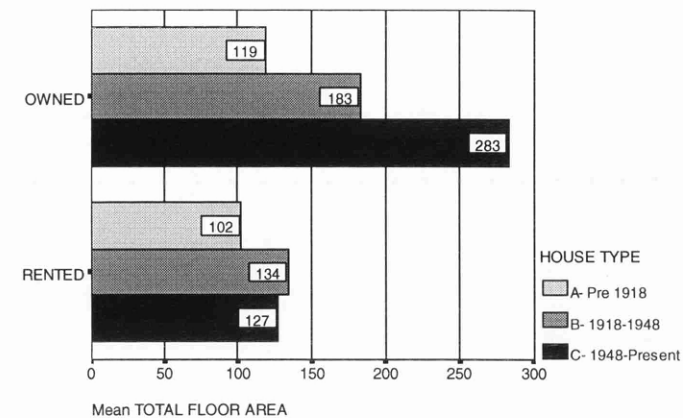


Figure 5.4 indicates the mean of total floor area of owned and rented houses amongst the three house types. It is obvious that the highest mean of total floor area among the whole sample exists in the owned houses of type C, while the lowest mean for total floor area exists in rented old houses of type A, built before 1918.

Figure 5.4: Bar graph for mean of total floor area of owned and rented houses by the house type.



It can be determined by the graph that the mean of total floor area of the owned houses in general is higher than the mean of total floor area of rented houses. It could be inferred that people build spacious houses for their own use, to fulfil their requirements and needs, and not for rental purposes.

Ownership is investigated in relation to levels of maintenance between the sample houses. Table 5.3 summarises the result.

Table 5.3 : The relationship between ownership and maintenance by the house type

		HOUSE TYPE											
		A- Pre 1918				B- 1918-1948				C- 1948-Present			
		OWNERSHIP				OWNERSHIP				OWNERSHIP			
		OWNED		RENTED		OWNED		RENTED		OWNED		RENTED	
		MAINTENANCE		MAINTENANCE		MAINTENANCE		MAINTENANCE		MAINTENANCE		MAINTENANCE	
		Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
MONTHLY	1	3.7%											
ANNUALLY	7	25.9%	4	13.3%	7	23.3%	8	28.6%	5	10.2%	1	12.5%	
WHEN NEEDED	15	55.6%	21	70.0%	21	70.0%	19	67.9%	41	83.7%	6	75.0%	
NEVER	3	11.1%	3	10.0%			1	3.6%	3	6.1%			
DON'T KNOW	1	3.7%	2	6.7%	2	6.7%					1	12.5%	

It is obvious from table 5.3 that the majority of users among the three types of houses conduct maintenance work when needed. It is also implied that regular maintenance (monthly and annually) is performed more on type A and B houses compared to type C. This could be because older houses need more maintenance. However, it is suggested

that a higher percentage of owned houses among type A compared to rented are maintained regularly; for instance 3.7% of type A owners maintain their houses monthly compared to none of the rented houses' users. Also 25% of type A owners reported conducting annual maintenance work on their houses in comparison to 13.3% of rented houses' users. The trend is reversed amongst type B houses. This could be because rented houses of type A are occupied mostly by poor people who cannot afford regular maintenance, while this is not the case among type B houses.

On the other hand it is indicated that the level of maintenance does not vary significantly between owned and rented houses of type B and C. This could be because these houses need less maintenance compared to type A houses or it might be that the financial situation of people living in owned or rented houses of type B and C is better compared to type A. However, maintenance will be further investigated in chapter seven as one aspect of the house condition, and it will also be investigated in relation to the need for continuous maintenance being one of the reasons behind preferring not to live in old houses.

IV. House characteristics (for plans, elevations, and digital images refer to chapter 2)

The main features of the three types of houses are investigated, therefore the number of stories the house consists of and its layout are discussed. The house layout is analysed in terms of total area, number of rooms, and their different functions. The configuration of house plan and its basic design elements is also determined for each of the three types of houses.

a) Number of stories of the house

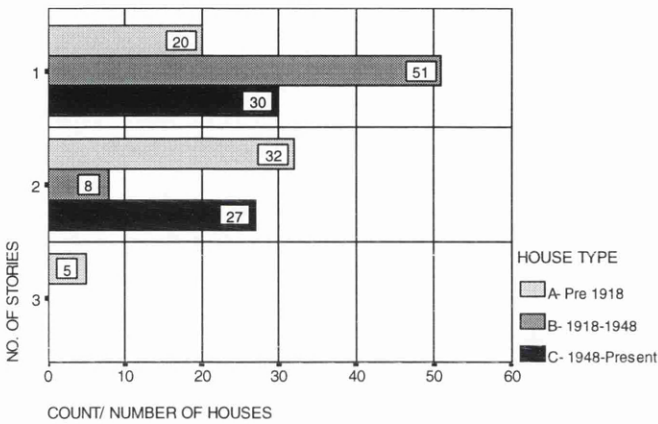
Houses of the sample are examined in terms of number of stories each house has, then a comparison between the three house types will reveal peculiar characteristics of house expansion, and the way it relates with its context. Number of stories of the house will be investigated in relation to family size later in the chapter.

Table 5.4: Count and percentage of houses by the number of stories.

		HOUSE TYPE					
		A- Pre 1918		B- 1918-1948		C- 1948-Present	
		NO.OF STORIES		NO.OF STORIES		NO.OF STORIES	
		Count	%	Count	%	Count	%
1		20	35.1%	51	86.4%	30	52.6%
2		32	56.1%	8	13.6%	27	47.4%
3		5	8.8%				

Table 5.4 and figure 5.5 indicate that there are three levels evident in the three types of houses. One, two, and three story houses are found among type A, while in type B, and C only one and two story houses are found. From the number and percentage of the houses illustrated in table 5.4, it is indicated that:

Figure 5.5: The relationship between the number of houses and the number of stories by the house type.



1. The largest number of two story houses are found in type A, (32 houses, 56.1%). The sample also contained three story houses on a narrow scale (5, 8.8%). Type A houses are found in the old city of Nablus, where houses were mostly constructed on more than one level. The need for vertical expansion is due to the dense urban structure and the restricted boundaries of the old city. The ground floor was used as an entrance and service area, while the upper floors accommodated other functions.
2. Type B houses have the largest number (51, 86.4%) of one story houses; nevertheless, these houses were the first to be built outside the boundaries of the old city. The abundant land facilitated horizontal expansion and allowed people to construct their houses on one level without the need for vertical expansion.
3. In type A houses, the restricted boundaries of the old city obliged people to expand their houses vertically to accommodate the extended family, whereas the expansion in type B houses was horizontal. The trend of vertical expansion reoccurred in type C houses due to the rise in land prices and the restriction of the city's expansion imposed by the Israeli occupation during the period 1967- 1995.

b) The house layout (for plans refer to chapter 2)

The layout of the three types of houses is discussed in terms of total area, number of rooms, different functions of the house, and plan configuration.

1. Total floor area

To comprehend the change of the house layout and to identify properties of each house type, total floor area of houses among the sample are examined. It is essential at this stage to pinpoint the difference between houses designed by architects, and other houses built without their aid, in order to assess the influence of architects on house design transformation.

Table 5.5: Descriptive statistics for house total floor area by the house type.

			Count	Mean	Median	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	TOTAL AREA	57	110.3	90	120	700	30	670
	B- 1918-1948	TOTAL AREA	59	159.9	150	150	360	50	310
	C- 1948-Present	TOTAL AREA	57	261.2	220	200	715	80	635

Figure 5.6: A stacked bar diagram showing the distribution of the total floor area in m² by the house type.

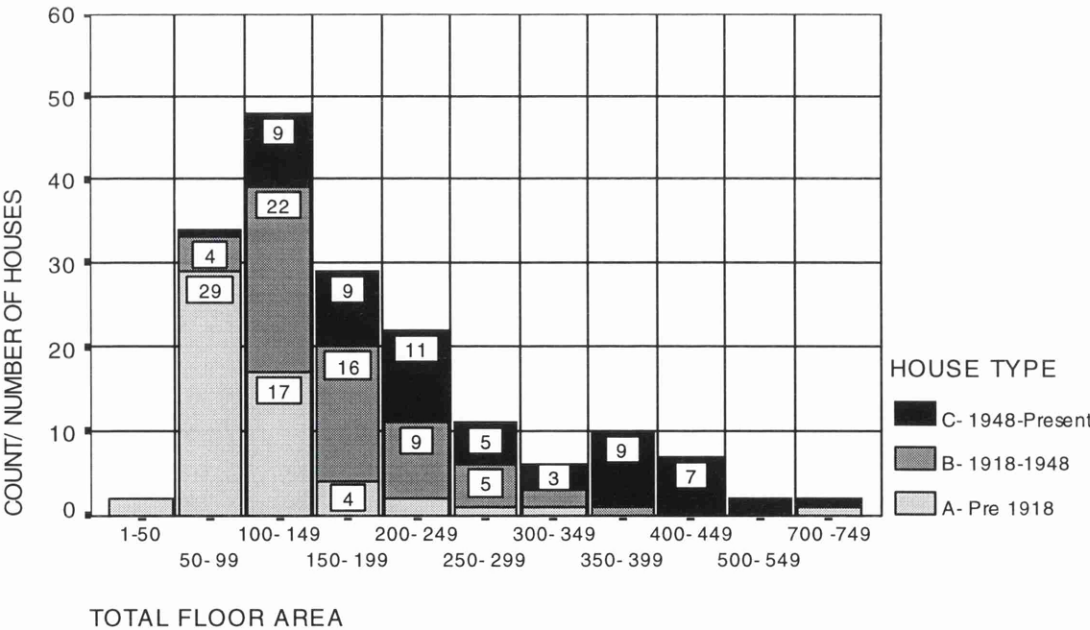


Table 5.6: Number and percentage of houses by the total floor area.

	HOUSE TYPE					
	Pre 1918		1918-1948		1948-Present	
	TOTAL AREA IN METER SQUARED		TOTAL AREA IN METER SQUARED		TOTAL AREA IN METER SQUARED	
	Count	%	Count	%	Count	%
1-50	2	3.5%				
50- 99	29	50.9%	4	6.8%	1	1.8%
100- 149	17	29.8%	22	37.3%	9	15.8%
150- 199	4	7.0%	16	27.1%	9	15.8%
200- 249	2	3.5%	9	15.3%	11	19.3%
250- 299	1	1.8%	5	8.5%	5	8.8%
300- 349	1	1.8%	2	3.4%	3	5.3%
350- 399			1	1.7%	9	15.8%
400- 449					7	12.3%
500- 549					2	3.5%
700 -749	1	1.8%			1	1.8%

Figure 5.6, table 5.5, and 5.6 signify that the largest number of houses with a small total floor area are found among type A. Therefore more old houses within the old city of Nablus, (29 houses, 50.9%), have a total floor area of 50- 99 m², while only 17 houses (29.8%) have a total area of 100- 149 m². A few houses among the sample have smaller or larger total floor areas.

Descriptive statistics for total floor area of **type A** houses in m² are: The mean is 110.3 , the median is 90, the mode is 120, and the range is 670.

In type B houses it can be suggested that there is an increase in the total floor area of the majority of houses if compared to type A. Thus the majority of **type B** houses (22, 37.3%) have a total area that falls within the range of 100- 149 m², while 16 houses (27.1%) have a total floor area of 150- 199 m², and few houses have a smaller or larger total floor area. The mean is 159.9 m², the median is 150, the mode is 150, and the range is 310.

Type C houses have a wide range of variation in total floor area ranging from 50-99 to 700- 749 m², however the mean is 261.2 m², the median is 220, the mode is 200, and the range is 635 m². This variation in total floor area among the sample houses of type C could be related inter alia, to the architect's intervention during this period in which houses were designed by professional architects. The total area of these houses could have been determined by architects according to families' size, their different functional

needs, and their requirements. This will be investigated further in the following chapters.

The mean total floor area of Nablus houses in general, old and new, was 130 m² according to an investigation carried out in 1984 (Khayyat, 1985, Quoted in Qamhie, 1992:132)

It is obvious that in the sample houses of type A an exceptional example has a large total floor area of 700- 749 m² which is far beyond the range of total floor areas of other houses surveyed. It could be that this house is one of the large houses which were used to accommodate the extended family. This house could have still been used by one family; unfortunately most of the large houses of the old city are now divided into small residences to accommodate the poorer members of the family (Yousof, 1996).

2. Number of rooms

In order to determine the main features of the house layout and to understand its components, the number of habitable rooms excluding utility rooms (kitchens, bathrooms, and storage space) is investigated. The mean, median, mode, and range will be determined for each house type to facilitate the comparison between the three house types. Different functions of the house are to be examined later.

Figure 5.7: A stacked bar diagram showing the distribution of number of rooms by the house type

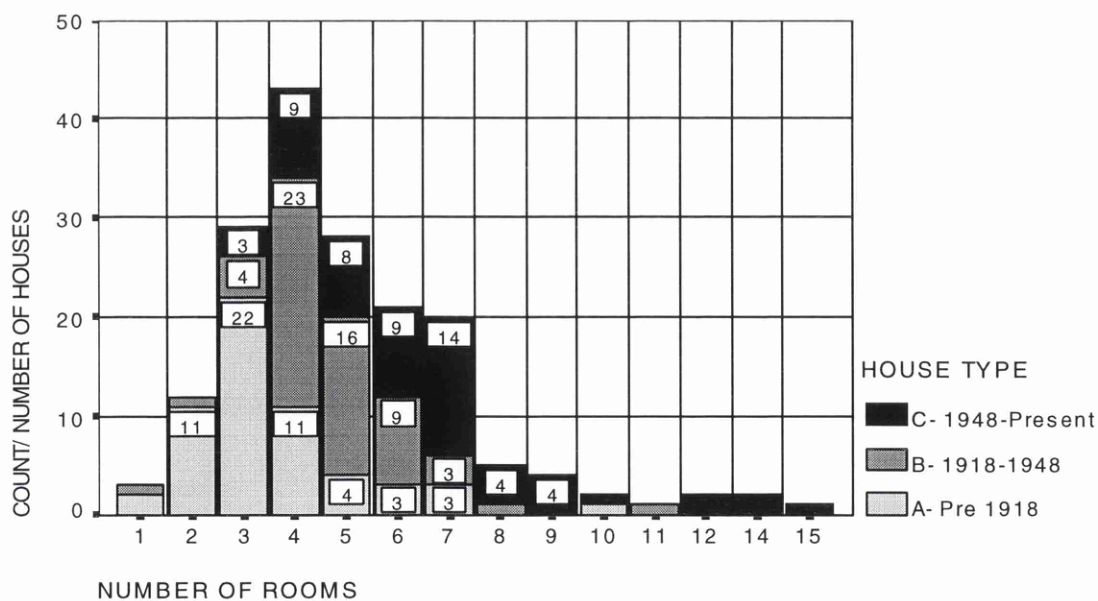


Table 5.7: Descriptive statistics for no. of rooms by the house type.

			Count	Mean	Median	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	No.of ROOMS	57	3.6	3	3	10	1	9
	B- 1918-1948	No.of ROOMS	59	4.8	5	4	11	1	10
	C- 1948-Present	No.of ROOMS	57	6.7	6	7	15	3	12

Table 5.8: Count and percentage for the distribution of number of rooms by the house type

HOUSE TYPE							
A- Pre 1918		B- 1918-1948		C- 1948-Present			
No.of ROOMS		No.of ROOMS		No.of ROOMS			
Count	%	Count	%	Count	%		
1	2	3.5%	1	1.7%			
2	11	19.3%	1	1.7%			
3	22	38.6%	4	6.8%	3	5.3%	
4	11	19.3%	23	39.0%	9	15.8%	
5	4	7.0%	16	27.1%	8	14.0%	
6	3	5.3%	9	15.3%	9	15.8%	
7	3	5.3%	3	5.1%	14	24.6%	
8			1	1.7%	4	7.0%	
9					4	7.0%	
10	1	1.8%			1	1.8%	
11			1	1.7%			
12					2	3.5%	
14					2	3.5%	
15					1	1.8%	

Figure 5.7, table 5.7, and 5.8 indicate that:

Among **type A** houses the largest percentage (38.6%, i.e. 22 houses) accommodates three rooms. The number of rooms within the sample ranges from 1 to 9 rooms per house. The mean for room number is 3.6, the median is 3, and the mode is 3.

The range of number of rooms widens slightly in **type B** houses, namely, from 1 to 10 rooms per house. More houses among the sample (23, i.e. 39%) have 4 rooms per house, the mean for number of rooms in house type B is 4.8, the median is 5, and mode is 4.

In **type C**, the distribution of houses in terms of number of rooms widens further, from 3 to 12 rooms per house. The mean for room number per house is 6.7, the median is 6, and the mode is 7.

It is concluded that change occurred from one type of house to another. The development according to time is evident in the increase of number of rooms from 3 (as the mode of type A) to 4, (the mode of type B) and then 7 (as a mode of type C).

Type C houses, however, represent the new houses designed by architects, so the wider range of number of rooms found in this sample could be related to the architect's influence and the contemporary house design approach which follows the needs and requirements of users. It could also be due to the change in the life style of people and the emergence of new requirements, and uses which necessitated the introduction of new spaces. This will be investigated further in the following chapters.

It might also be that in old houses there was no specification of function/ activity for each and every room, so the flexible usage of space allows for fewer rooms, whereas in new houses rooms are designed with specific functions in mind and the introduction of new uses means the need for extra rooms and spaces.

3. Different functions of the house

Different activities within the house layout will be discussed in each house type in term of frequency, percentage, in addition to count, mean, and range. The aim is to facilitate comparison between different house types identified by the study; A, B ,and C.

■ The reception room (visitors' room)

Table 5.9 :Descriptive statistics for reception rooms in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	RECEPTION ROOM	57	.9	1	2	0	2
	B- 1918-1948	RECEPTION ROOM	59	1.0	1	2	0	2
	C- 1948-Present	RECEPTION ROOM	57	1.4	1	4	0	4

Table 5.10 : Count and percentage of the reception rooms by house type.

HOUSE TYPE							
		A- Pre 1918		B- 1918-1948		C- 1948-Present	
		RECEPTION ROOM		RECEPTION ROOM		RECEPTION ROOM	
		Count	%	Count	%	Count	%
0		9	15.8%	1	1.7%	1	1.8%
1		46	80.7%	56	94.9%	39	68.4%
2		2	3.5%	2	3.4%	12	21.1%
3						2	3.5%
4						3	5.3%
Total		57	100.0%	59	100.0%	57	100.0%

Table 5.9 and 5.10 indicate that:

According to **type A** the highest percentage of houses surveyed, (46, i.e. 80%) are found to accommodate one reception room, while 2 houses (3.5%) accommodate two. In 9 houses (15.8%), however the reception room does not exist at all. Table 5.8 indicates that the mean of reception rooms in type A houses is 0.9, the mode is 1 and the range is 2.

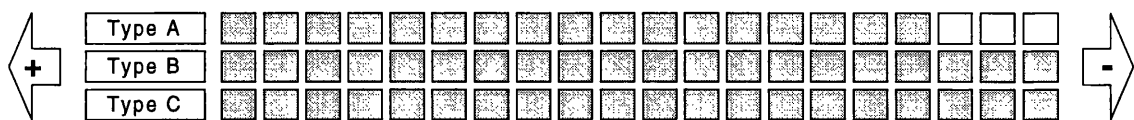
Among the sample houses of **type B** the number of houses with one reception room increases if compared to the number indicated among type A houses. 56 houses (94.9%) of type B are found with one reception room, while 2 houses(3.4%) accommodate two, and one house (1.7%) has none. Table 5.8 indicates that the mean and mode of number of reception rooms per house is 1. The range however is 2, the same as the range in house type A.

In **type C** houses, 65 out of 57 houses (98.2%) have one reception room or more, however one house has none. The mean is 1.4, the mode is 1 and the range is 4.

It can be concluded that reception rooms are found in high percentage of all types of houses A, B, and C. The percentage increases from type A to B to C respectively, therefore the number of houses with no reception room decreases in the same sequence. It can also be suggested from the tables that the range of number of reception rooms found in type A and B is the same (2), but the range increases in type C to 4. This could be an indication of the change in life style and social habits of people.

It is obvious that houses with no reception room exist in all three types. The number decreases from type A to C. Very few houses, i.e. one house among each of type B and C sample do not have reception rooms.

Figure 5.8: Percentage of sample houses with reception rooms (shaded squares) to those without (white squares) by house type to the nearest 5%.



■ The living room (family room)

Table 5.11; Descriptive statistics for living rooms in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	LIVING ROOM	57	.6	1	4	0	4
	B- 1918-1948	LIVING ROOM	59	.9	1	2	0	2
	C- 1948-Present	LIVING ROOM	57	1.3	1	4	0	4

Table 5.12: Count and percentage of the living rooms by house type

HOUSE TYPE							
		A- Pre 1918		B- 1918-1948		C- 1948-Present	
		LIVING ROOM		LIVING ROOM		LIVING ROOM	
	Count	%	Count	%	Count	%	
0	26	45.6%	7	11.9%	4	7.0%	
1	27	47.4%	49	83.1%	38	66.7%	
2	3	5.3%	3	5.1%	13	22.8%	
4	1	1.8%			2	3.5%	
Total	57	100.0%	59	100.0%	57	100.0%	

Table 5.11, and 5.12 indicate that:

Among sample houses of **type A**, 27 houses out of (57, i.e. 47.4%) accommodate one living room, while 26 houses (45.6%) have none. Few houses have more than one living room (3, i.e. 5.3%) have two, and one house (1.8%) has four. The mean is 0.6, the mode is 1, and the range is 4.

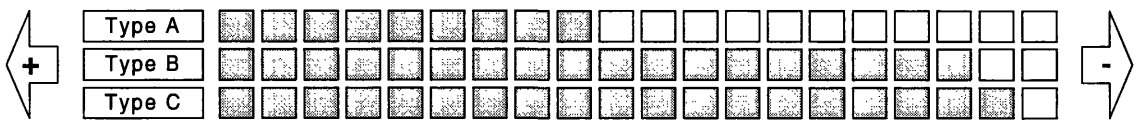
In **type B**, the number of houses with one living room is 49 out of (59, i.e. 83.1%), which can indicate a considerable increase compared to type A houses. The number of houses with no living room is (7, i.e. 11.9%) which indicates a sharp decrease if compared to houses with no living rooms of type A. However a few examples were found with more than one living room. 3 houses out of (59, i.e. 5.1%) have two. The mean for the sample is 0.9, the mode is 1 and the range is 2.

Amongst **type C** houses the number with one or more living rooms is 53 houses out of (57, i.e. 93%), 66.7% of the houses have one living room, 22.8% have two, and 3.5% have four. Only 4 houses (7%) do not have a living rooms. The mean is 1.3, the mode is 1 and the range is 4.

It can be concluded that the number of houses which accommodate a living room increased respectively from type A to type C, consequently the number of houses with no living room decreased respectively too. In type C it can be indicated that

houses with more than one living room have increased. This increase could be explained by the change in house layout due to architect’s intervention and the specification of functions for each room departing from the traditional concept of multi-purpose room. This was not considered previously in old houses where one room was used for different functions.

Figure 5.9: Percentage of sample houses with living rooms (shaded squares) to those without (white squares) by house type to the nearest 5 %.



■ The dining room

Table 5.13: Descriptive statistics for dinning rooms in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	DINING ROOM	57	.2	0	1	0	1
	B- 1918-1948	DINING ROOM	59	.5	0	2	0	2
	C- 1948-Present	DINING ROOM	57	.8	1	2	0	2

Table 5.14: Count and percentage of the dinning rooms by house type

		HOUSE TYPE					
		A- Pre 1918		B- 1918-1948		C- 1948-Present	
		DINING ROOM		DINING ROOM		DINING ROOM	
		Count	%	Count	%	Count	%
0		48	84.2%	33	55.9%	14	24.6%
1		9	15.8%	25	42.4%	39	68.4%
2				1	1.7%	4	7.0%
Total		57	100.0%	59	100.0%	57	100.0%

Table 5.13 and 5.14 indicate that among the sample houses surveyed:

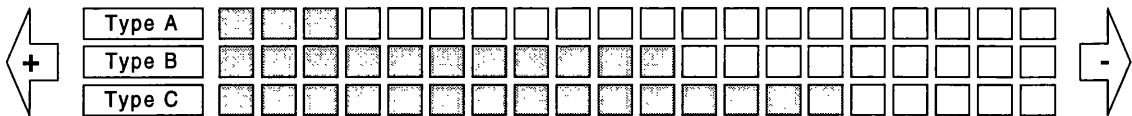
Type A comprise quite a large percentage of houses with no dining room at all (48 houses out of 57, i.e. 84.2%), while only 9 houses out of 57 (15.8%) have a dining room. The mean is 0.2, the mode is 0 and the range is 1.

Among **type B**, a large percentage of houses also have no dining room, (33 houses out of 59, i.e. 55.9%), while 25 houses (42.4%) have a dining room. One house however (1.7%) has two dining rooms. The mean is 0.5, the mode is 0 and the range is 2.

Among **type C** houses, 14 houses out of 57 (24.6%) accommodate no dining rooms at all, while 39 houses out of 57 (68.4%) have one dinning room, and 4 houses (7%) have two. The mean is 0.8, the mode is 0 and the range is 2.

It can be concluded that dining rooms in general are not so frequent in type A and B houses and common in type C houses. The percentage of houses that accommodate a dining room increased from one house type to another respectively from A to C. Consequently, the number of houses with no dining room decreased in the same respect, 48 among type A to 33 among type B, to 14 among type C houses. Few examples of type B and C accommodate two dining rooms, however the number of houses with two dining rooms increased from type B to type C houses.

Figure 5.10 : Percentage of sample houses with dining rooms (shaded squares) to those without (white squares) by house type to the nearest 5%.



■ **The bedroom**

Table 5.15: Descriptive statistics for bedrooms in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	BEDROOM	57	1.8	1	3	1	2
	B- 1918-1948	BEDROOM	59	2.5	2	5	0	5
	C- 1948-Present	BEDROOM	57	3.2	3	6	1	5

Table 5.16: Count and percentage of the bedrooms by house type

HOUSE TYPE							
A- Pre 1918				B- 1918-1948		C- 1948-Present	
BEDROOM		BEDROOM		BEDROOM		BEDROOM	
Count		%		Count	%	Count	%
0				1	1.7%		
1	24	42.1%		3	5.1%	2	3.5%
2	23	40.4%		28	47.5%	13	22.8%
3	10	17.5%		22	37.3%	25	43.9%
4				4	6.8%	8	14.0%
5				1	1.7%	6	10.5%
6						3	5.3%

Table 5.15 and 5.16 indicate that:

Among **type A** houses the sample surveyed has no example of houses without bedrooms. 24 houses out of 57 (42.1%) accommodate one bedroom, 23 houses (40.4%) have two bedrooms, while 10 houses out of 57 (17.5%) have three bedrooms.

One house out of 59 (1.7%) is found amongst the sample houses of **type B** without any bedroom, while 3 houses (5.1%) have one bedroom, 28 houses (47.5% the highest percentage among the sample) have two bedrooms, 22 houses (37.3%) have three bedrooms, 4 houses (6.8%) have four, and one house (1.7%) has five. The mean is 2.5, the mode is 2, and the range is 5.

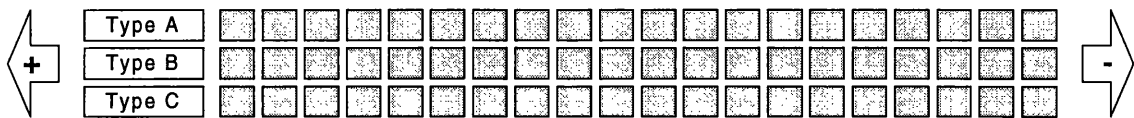
Sample houses of **type C** consist of 2 houses out of 57 (3,5%) with one bedroom, 13 houses (22.8%) with two bedrooms, while 25 houses (43.9% the highest percentage) accommodate three bedrooms. Some houses of the same sample have more than three bedrooms i.e. 8 houses (14%) have four, 6 houses (10.5%) have five, and 3 houses have six. The mean is 3.2, the mode is 3, and the range is 5.

As a result it could be concluded that the range of number of bedrooms per house increased from one house type to another, from 3 among type A, to 5 among type B, to 6 among type C houses.

The highest percentage of houses in the type A sample comprises the one bedroom house, while in type B it comprises the two bedroom house, and in type C the three bedroom house.

It could be inferred that the increased number of bedrooms is due to a change in people’s life style, especially the need for privacy between family members, and the change in family income and affordability. Also it could be due to the specific usage of each room which accompanies the contemporary house design as created by architects. However in the old houses the same room was used for more than one function.

Figure 5.11: Percentage of sample houses with bedrooms (shaded squares) to those without (white squares) by house type to the nearest 5%.



■ The bathroom

Table 5.17: Descriptive statistics for bathrooms in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	BATHROOM	57	1.2	1	3	0	3
	B- 1918-1948	BATHROOM	59	1.5	1	4	1	3
	C- 1948-Present	BATHROOM	57	2.5	1	6	1	5

Table 5.18: Count and percentage of the bathrooms by house type

HOUSE TYPE							
		A- Pre 1918		B- 1918-1948		C- 1948-Present	
		BATHROOM		BATHROOM		BATHROOM	
		Count	%	Count	%	Count	%
0		2	3.5%				
1		45	78.9%	33	55.9%	18	31.6%
2		7	12.3%	25	42.4%	15	26.3%
3		3	5.3%			13	22.8%
4				1	1.7%	4	7.0%
5						4	7.0%
6						3	5.3%

Table 5.17, and 5.18 indicate that:

Among the **type A** sample, which totals 57 houses, (2, i.e. 3,5%) are found with no bathrooms, while the majority, 45 houses, (78%) have one bathroom, 7 houses (12.3%) have two, and 3 houses (5.3%) have three bathrooms. The mean is 1.2, the mode 1 and the range is 3.

In 1985 a study was carried out in the old city of Nablus by Khatib, in which type A houses were investigated in terms of number of bathrooms per house. The results revealed that 60% of the houses did not have bathrooms, 20% had one, and 2.4% had more than one bathroom (Quoted in Qamhieh, 1992).

Another survey carried out in 1994 revealed that 11.4% of the houses had no bathrooms, while 82.7% had one, and 5.9% had two (Yousof, 1996).

When comparing the three sets of figures compiled in 1985, 1994, and 1996 (results of this study), it can be concluded that the number of houses which accommodate a private bathroom has increased. This trend could be a result of a change in life style of people, as in the past people used to frequent the public baths found in the old city.

In **type B** houses, the sample surveyed did not include any house without a bathroom. Thirty three houses out of 59 (55.9%) have one bathroom, while 25 houses (42.4%) have two bathrooms, and one house (1.7%) has four. The mean is 1.5, the mode is 1, and the range is 3.

Among **type C** all houses have their own bathrooms. A large number have 1 , 2, or 3 bathrooms, while the maximum number of bathrooms per house is 6 among the sample of house type C. The mode is 1, and the range is 5.

It could be concluded that in type A houses there are few cases without a bathroom and this might be because in the past it was not essential for the house to accommodate its private bathroom as the public baths were available for use.

Houses of type B possess a private bathroom but the number is limited to 1 or 2 within these houses. Among houses of type C various figures are indicated for the number of bathrooms per house. The fact that the number of bathrooms per house has increased in the type C house sample could be due to the change of life style of people or the architect's intervention,

Figure 5.12 : Percentage of sample houses with bathrooms (shaded squares) to those without (white squares) by house type to the nearest 5%.



■ **The kitchen**

Table 5.19: Descriptive statistics for kitchens in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	KITCHEN	57	1.0	1	2	0	2
	B- 1918-1948	KITCHEN	59	1.0	1	2	1	1
	C- 1948-Present	KITCHEN	57	1.2	1	4	1	3

Table 5.20: Count and percentage of kitchens by house type

HOUSE TYPE							
A- Pre 1918				B- 1918-1948		C- 1948-Present	
KITCHEN				KITCHEN		KITCHEN	
Count		%		Count		Count	
0	5	8.8%					
1	49	86.0%		57	96.6%	46	80.7%
2	3	5.3%		2	3.4%	9	15.8%
3						1	1.8%
4						1	1.8%

Table 5.19 and 5.20 indicate that:

Among **type A** houses the majority of 49 houses (86%) have one kitchen, while 3 houses (5.3%) have two kitchens. However, 5 houses (8.8%) are found without kitchens. The mean and the mode are 1 and the range is 2

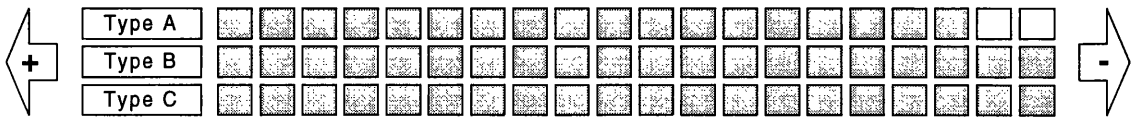
In a study conducted by Khatib in 1985, it was found that 2.4% of the houses of type A inside the old city of Nablus had no kitchens, while 20.8% of the houses had one, and 76.8% of the houses had shared kitchens. (Quoted in Qamhieh, 1992). On the other hand Yousof, 1994, found that 4.8% of the houses had no kitchen, 90.8% had one, 2.7% had two, while 1.7% used shared kitchens.(Yousof, 1996).

The difference between the figures of houses with no kitchens between the two previous studies and this one could be one consequence of the category of shared kitchens between two ore more houses, which is not identified in this study.

Among **type B** houses, 57 out of 59 houses (96%) have one kitchen, and 2 houses (3.4%) have two. The mean, the mode, and the range are 1. Among type C houses, 46 out of 57 houses(80.7%) have one kitchen, 9 houses (15.8%) have two kitchens, one house (1.8%) has three kitchens and another house has four kitchens. Therefore none of the C type houses surveyed is found without its own kitchen.

It could be concluded that most houses among the three house types have one kitchen. In type B and C the houses surveyed accommodate their own kitchens, but few houses of type A do not. However it could be inferred that some kitchens are shared between several households as was found by previous studies or it could be that people in type A houses use an outside space for cooking, i.e. the courtyard.

Figure 5.13: Percentage of sample houses with kitchens (shaded squares) to those without (white squares) by house type to the nearest 5%.



■ The garden

Table 5.21: Descriptive statistics for gardens in relation to house type.

		Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	GARDEN	57	.2	0	2	0
	B- 1918-1948	GARDEN	59	.6	1	3	0
	C- 1948-Present	GARDEN	57	.9	1	4	0

Table 5.22: Count and percentage of the gardens by house type

HOUSE TYPE							
A- Pre 1918				B- 1918-1948		C- 1948-Present	
GARDEN		GARDEN		GARDEN		GARDEN	
	Count	%	Count	%	Count	%	
0	48	84.2%	25	42.4%	17	29.8%	
1	8	14.0%	33	55.9%	32	56.1%	
2	1	1.8%			5	8.8%	
3			1	1.7%	1	1.8%	
4					2	3.5%	

Table 5.21 and 5.22 indicate that:

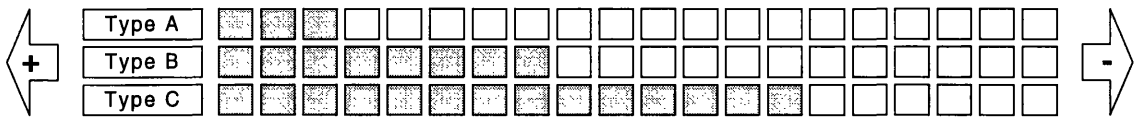
Among **type A** houses gardens are not popular. Only 8 houses (14%) of the whole sample have gardens which are outside the courtyard (see figure 2.3, chapter 2), however one of the houses (1.8%) has two. The houses found with no gardens were 48 (84.2%). The mean is 0.2, the mode is 0 and the range is 2.

Among the house **type B** sample 33 houses (55.9%) have gardens, while 25 houses (42.4%) do not have gardens and one house was found with three gardens.

Gardens are most frequently found among **type C** houses. Thus 83% of the houses surveyed have gardens, a few of them have more than one, and only 17 houses out of (57, i.e. 29%) are found with no gardens.

It could be concluded that in type A houses courtyards were used as an outside space which in most cases replaced gardens, although in large scale houses gardens are present independent of the courtyard. For type C, gardens existed around the house, at the front, back or sides. Therefore the detached type of houses in which the house is built in the middle of the site plot allow for the use of gardens outside. The size of the garden depends on the size of the building plot and the size of the house to be built.

Figure 5.14: Percentage of sample houses with gardens (shaded squares) to those without (white squares) by house type to the nearest 5%.



■ The veranda

The veranda is an open porch attached to the house. It is a covered space with no walls that leads to the main entrance.

Table 5.23: Descriptive statistics for verandas in relation to house type.

			Count	Mean	Mode	Maximum	Minimum	Range
HOUSE TYPE	A- Pre 1918	VERANDA	57	.2	0	2	0	2
	B- 1918-1948	VERANDA	59	.7	1	2	0	2
	C- 1948-Present	VERANDA	57	2.0	2	6	0	6

Table 5.24: Count and percentage of verandas by house type.

HOUSE TYPE							
A- Pre 1918				B- 1918-1948		C- 1948-Present	
VERANDA				VERANDA		VERANDA	
	Count	%		Count	%	Count	%
0	48	84.2%		22	37.3%	11	19.3%
1	7	12.3%		30	50.8%	12	21.1%
2	2	3.5%		7	11.9%	15	26.3%
3						11	19.3%
4						3	5.3%
5						4	7.0%
6						1	1.8%

Table 5.23 and 5.24 indicate that

The majority of houses of **type A**, 48 houses out of 57 (84.2%) do not have verandas, however a few houses (7, i.e. 12.3%) have one veranda , and 2 houses (3.5%) have two. The veranda exists in a very narrow scale in houses of type A. The mean is 0.2, the mode is 0 and the range is 2.

Among **type B** houses verandas are frequent, 30 houses out of 59 (50.8%) have one , 7 houses (11.9%) have two and 22 houses (37.3%) did not have any. The mean is 0.7, the mode is 1 and the range is 2.

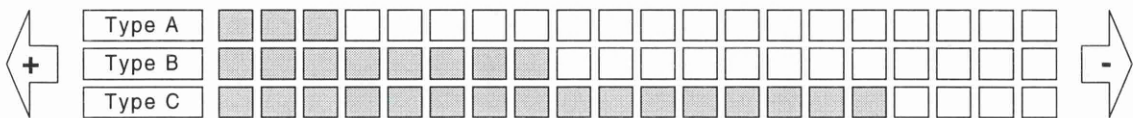
Among **type C** houses verandas are more frequent. only 11 houses out of 57 (19.3%) did not have verandas, and the rest of the houses within the sample have one or more. The mean is 2, the mode is 2 and the range is 6. Senan considered verandas as one of the new elements introduced into contemporary house design which is most common in Palestinian houses (Senan, 1993:256).

It could be concluded that in type A houses, the major absence of verandas is due to the introverted concept of house design which characterises type A. These houses are constructed around open courtyards, therefore the house opens towards the court with its

back to the street.

The high average of houses with verandas among type B and C demonstrates the extroverted concept of their design in which houses face towards the street or open onto the best view. The moderate weather in Palestine encourages people to use verandas frequently.

Figure 5.15: Percentage of sample houses with verandas (shaded squares) to those without (white squares) by house type to the nearest 5%.



4. The plan configuration

Plan compositions or the organisation of plans in houses of the sample surveyed are investigated. The main objective is to arrive at the design concept behind the plan configuration of each of the three house types and to form a conceptual model for the planing involved in each house type. Houses were examined to determine the kind of spaces each house accommodates. Elements investigated are thought to have a profound effect on the layout configuration. These were: the courtyard, the central hall, and the garden or combination of two of the elements.

Figure 5.16: A stacked bar diagram showing the distribution of architectural elements by house type



Table 5.25: Count and percentage of different architectural elements found in house layouts of the three types of houses

	HOUSE TYPE					
	A- Pre 1918		B- 1918-1948		1948-Present	
	ARCHITECTURAL ELEMENTS		ARCHITECTURAL ELEMENTS		ARCHITECTURAL ELEMENTS	
	Count	%	Count	%	Count	%
NON	16	28.1%	3	5.1%	14	24.6%
COURTYARD	32	56.1%	1	1.7%		
CENTRAL HALL			21	35.6%	2	3.5%
GARDEN	3	5.3%	6	10.2%	41	71.9%
HALL+GARDEN			28	47.5%		
COURT+GARDEN	6	10.5%				

Figure 5.16 indicates the important architectural elements which featured frequently in the majority of houses in each type. It is evident that most of the houses of type A have courtyards, while some have gardens or courtyards and gardens. Houses of type B have central halls or central halls and gardens, while the use of courtyards in that period is not common. In house type C, gardens occurred frequently, while the central hall and courtyard were discontinued.

Table 5.25 shows that the large percentage amongst the 57 houses of type A, 32 houses (56.1%) have courtyards, while in the 59 houses of type B, 21 (35.6%) have central halls and 28 houses (47.5%) have central halls and gardens. In 57 houses of type C, 41 houses (71.9%) of the sample have gardens.

It can be concluded that the courtyard, which was the main element in plan composition of house type A, ceased to exist in type B houses, as only one house (1.7%) of type B accommodates a courtyard. This could be because the courtyard was replaced by the central hall which was covered, so climatically it was more convenient for users than the open courtyard. Houses of type B were located outside the crowded old city, where land was abundant and privacy consideration was less strict. In this case houses were outward oriented in contrast with the inward oriented courtyard houses.

The central hall, ceased to exist among type C houses; only two houses i.e. 3.5% of type C sample accommodated central halls. The reason behind this could be that the central hall acted as a circulation space connecting different rooms. Obviously it was not

convenient to use or to furnish. It might be that architects started to introduce more efficient solutions which contributed to the replacement of the central hall with corridors and lobbies.

From figure 5.16 and table 5.25 it is evident that each house type has a main element of plan composition that characterises and distinguishes it as a typology different from the others.

1. The courtyard is the main design element found in type A houses built before 1918 and located inside the old city of Nablus. Traditionally, the courtyard was adopted because of several reasons, religious, social, climatic....etc. This has been discussed by Hakim (1986), Petherbridge (1978: 197-200), Hugh and Roberts (1979: 40) (for more information refer to chapter two). The inward orientation of type A houses ensured ultimate privacy for their users from passers- by as well as from surrounding houses.
2. The central hall is the main design element found in type B houses built during the colonial period from 1918 to 1948. The outward looking, covered central-hall house developed as a result of the courtyard transformation into a covered hall.
3. The garden, which exists at the front, or back or surrounds new houses, is an element found concurrently in most houses of type C built during the period from 1948 to the present time. The outwardly oriented concept of design continued from type B to C, but the layout changed to reduce the circulation area, created by the central hall and often regarded as a wasted space. Thus the contribution of the architect to change in house design is evident amongst houses of type C.

The garden could be the only persistent element in the three types of houses. In type A houses (9, i.e. 15.8%) have gardens (3, i.e. 5.3%) with gardens and 6 (10.5%) with gardens and courtyards. In type B houses (34, i.e. 57%) have gardens (6, i.e. 10.2%) with gardens, and (28, i.e. 47.5%) with gardens and central halls. The highest figure found is in type C houses where 41 houses out of (57, i.e. 71.9%) have gardens.

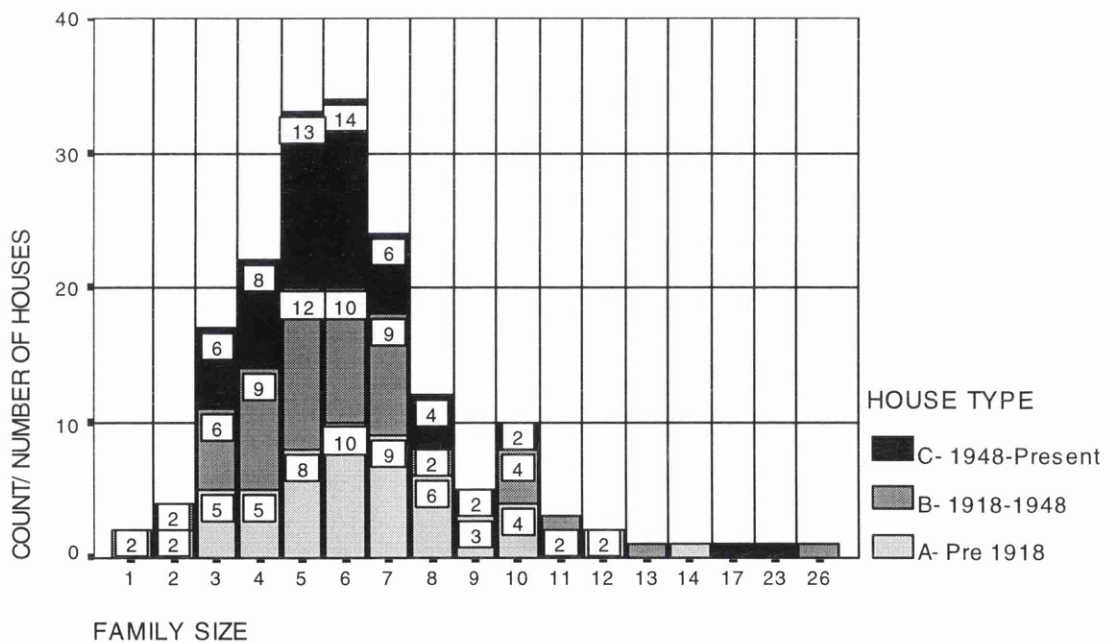
V. Family size

Family size of the sample houses is investigated to examine the degree of overcrowding in houses of the three types. The main objective is to study the sample houses in terms of, total floor area, number of rooms, and number of stories and relate the findings to family size. Table 5.26 and figure 5.17 indicate the distribution of family size among the three house types.

Table 5.26: Descriptive statistics for family size by house type

HOUSE TYPE			Count	Mean	Median	Mode	Maximum	Minimum	Range
A- Pre 1918	FAMILY SIZE		57	6.6	6	6	14	2	12
B- 1918-1948	FAMILY SIZE		59	5.9	5	5	26	1	25
C- 1948-Present	FAMILY SIZE		57	6.2	6	6	23	3	20

Figure 5.17: A stacked bar diagram showing the distribution of family size by house type.



In 1989 the family size within the old city of Nablus was 6.46 per household (Za'nnon, 1989), while another survey carried out in 1994 indicated that the family size was 7.9 persons per household (Yousof, 1996). The figure resulting from this study (6.6) is more or less between the two previous figures.

From figure 5.17 and table 5.26 it can be concluded that :

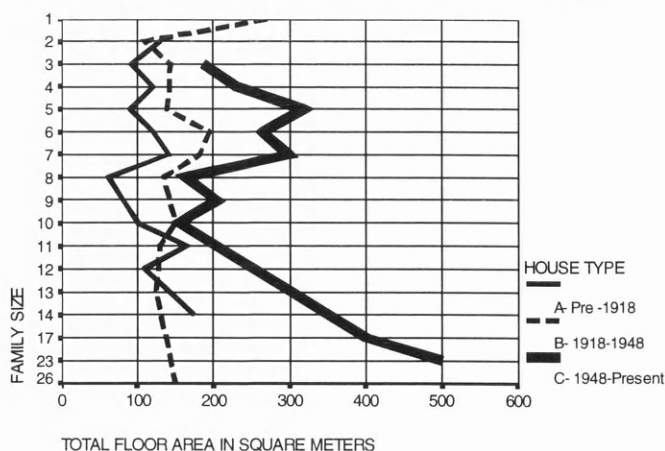
1. The mean of family size in house type B and C is the same (6 persons) , while in house type A it shows a slight increase, to 7 persons per household. This could indicate that the family size of type A, which are old houses inside the old city, is larger than houses of the other two types, and thus the degree of crowding could be larger. This will be investigated further in the chapter, when the total floor area and number of rooms are examined in terms of family size.
2. The most frequent figure of family size, the mode, is the same in house type A and C of the sample, (6 persons per family), while it is less in house type B, in which the mode is 5 persons per family.
3. The large number of family size found in type B and C could be an indication that the extended family still exists, although on a very narrow scale as indicated by the mean and the mode.

More investigation will reveal if there is a relationship between the family size and both the total floor area and the number of rooms in the three types of houses.

a) The relationship between the total built-up floor area of the house and the family size

Figure 5.18 indicates that the mean total floor area of type A houses fluctuates between 50 m² and 150 m² without being affected by the family size; the same trend is evident in house type B, with an increase in the total floor area. The mean total floor area of house type B fluctuates between 100 m² and 250 m², therefore the change in total floor area can be considered inconsistent if compared with the increase in family size in the two house types of A and B. Type C suggests a wide range of total floor area indicated between 100 m² and 500 m². The figure suggests that

Figure 5.18: The relationship between the total floor area of the house in m² and the family size by the house type.



the total area starts to increase with the increase in family size in the range between 3- 7 persons per household, however the trend is reversed later between 7 and 10 persons per household. After this threshold of 10 persons, the total floor area increases again according to the increase in family size. Therefore it could be inferred that the total floor area in general increases following the increase in family size among sample C houses.

The increase of the total floor area according to family size, which could characterise type C houses, could be due to architectural intervention as these houses are new houses designed by architects. It might be that consideration was given to the family's different requirements and extra spaces for different functions were introduced to the house which increased the total floor area.

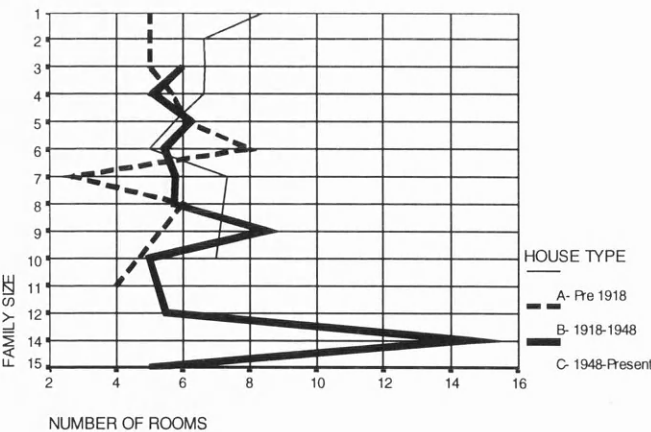
b) The relationship between the number of rooms and the family size

Figure 5.19 indicates the extent to which the number of rooms in each of the three house types is affected by the change in family size within the sample of houses used in this study. The figure shows that in type A houses the number of rooms does not increase with the increase in family size. This could be because of the multi- purpose rooms of the traditional house, in which one space has multiple usage.

It could also be because of privacy which was traditionally considered collectively between family members so it was convenient for family members to use the same space.

Type B houses have the same tendency as type A houses, therefore the number of rooms in type B houses is not affected by the change in family size.

Figure 5.19: The relationship between the number of rooms and family size by house type



This could be because functions were not allotted to spaces of type B houses so each room was subject to multiple usage. This could have reduced the number of rooms

among these houses. Privacy considerations could have been similar to those of type A houses

In house type C, although the number of rooms did not respond consistently to the change in family size, in general it could be indicated that an increase in number of rooms occurs when the family size increases. This could be due to change in house layout in which spaces were specified for certain functions and it could also be because privacy considerations between family members changed from collective to individual privacy. Thus members of the family needed their own private spaces.

This could also be the influence of the architect’s intervention and the way house design developed to accommodate the requirements of the user. However a larger family size would have needed extra rooms.

c) The number of stories of the house and family size

Table 5.27 indicates the distribution of family size in houses of each type A, B, C according to number of stories.

Table 5. 27: Percentage of family size and the no. of stories of the three house types

HOUSE CATEGORY/ TIME														
Pre 1918						1918-1948				1948-Present				
NO.OF STORIES						NO.OF STORIES				NO.OF STORIES				
1		2		3		1		2		1		2		
FAMILY SIZE		FAMILY SIZE		FAMILY SIZE		FAMILY SIZE		FAMILY SIZE		FAMILY SIZE		FAMILY SIZE		
Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	
1						1	2.0%	1	12.5%					
2	1	5.0%		1	20.0%	2	3.9%							
3	1	5.0%	4	12.5%			6	11.8%			4	13.3%	2	7.4%
4	1	5.0%	2	6.3%	2	40.0%	5	9.8%	4	50.0%	6	20.0%	2	7.4%
5	3	15.0%	5	15.6%			12	23.5%			4	13.3%	9	33.3%
6	2	10.0%	7	21.9%	1	20.0%	7	13.7%	3	37.5%	8	26.7%	6	22.2%
7	5	25.0%	3	9.4%	1	20.0%	9	17.6%			2	6.7%	4	14.8%
8	4	20.0%	2	6.3%			2	3.9%			3	10.0%	1	3.7%
9	1	5.0%	2	6.3%							2	6.7%		
10	1	5.0%	3	9.4%			4	7.8%			1	3.3%	1	3.7%
11	1	5.0%	1	3.1%			1	2.0%						
12			2	6.3%										
13							1	2.0%						
14			1	3.1%										
17													1	3.7%
23													1	3.7%
26							1	2.0%						
Total	20	100.0%	32	100.0%	5	100.0%	51	100.0%	8	100.0%	30	100.0%	27	100.0%

The table shows that in **type A** houses, of one story, the highest percentage (25%) of houses, counted 5 out of 20, has a family size of 7 members. In two story houses the highest percentage (21.9%), counted 7 out of 32, has a family size of 6 members. In the three story houses the highest percentage of (40%), counted 2 out of 5, has a family size of 4 members.

In **type B** houses of one storey, the highest percentage (23.5%), counted 12 out of 51, has a family size of 5 members. In the two storey houses of the same sample, the highest percentage is (50%), counted 4 out of 8, with a family size of 4 members.

In **type C** houses of one storey, the highest percentage (26.7%), counted 8 out of 30, has a family size of 6, while in the two storey houses, the highest percentage (33.3%), counted 9 out of 27, has a family size of 5.

It could be determined from table 5.27 that larger families live in one level houses of type A. This could suggest a high degree of crowding inside the old city of Nablus, especially if the small total floor area of the type A house was taken into consideration.

5.2.2. PART ONE (B) : Physical Condition

Part one (B) of the house user questionnaire investigates the building materials used in the construction of the three types of sample houses; it also examines the physical condition of these houses from the inside and outside. The main objective of this part is to compare the three house typologies identified to detect any change occurring in house design, then try to link that to the role of the user regarding the change.

I. Construction materials

Discussion of materials used in the construction of the three house types will include the building materials as well as materials used for window frames.

a) Building materials

For the purpose of investigating the change in building materials used in each of the three house types, data collected are analysed and results are discussed.

Table 5.28 indicates that stone was the main building material used in the construction of the majority of houses in the three types, A, B, and C. Thus stone has persisted as a building material during the three stages of development in house design in Nablus.

Table 5.28: Distribution of building materials according to house type.

BUILDING MATERIALS	HOUSE TYPE					
	A- Pre 1918		B- 1918-1948		C- 1948-Present	
	Count	%	Count	%	Count	%
STONE	55	96.5%	59	100.0%	57	100.0%
CONCRETE BLOCKS	2	3.5%				

However some concrete blocks exist as building material in houses of type A. It could be explained that this material was an additional structure added later to the original house. It is common in the old city of Nablus to find additions to the original houses, constructed of cheap new materials (Yousof, 1996).

b) Window frame

To assess the extent of change in materials used for construction of houses of each type an investigation is carried out to detect materials used for window frames for each house type. In figure 5.20 the horizontal axis represents the number of houses, while the vertical axis represents the material used for window frames.

Figure 5.20 : A stacked bar diagram showing the distribution of window frame material by the house type

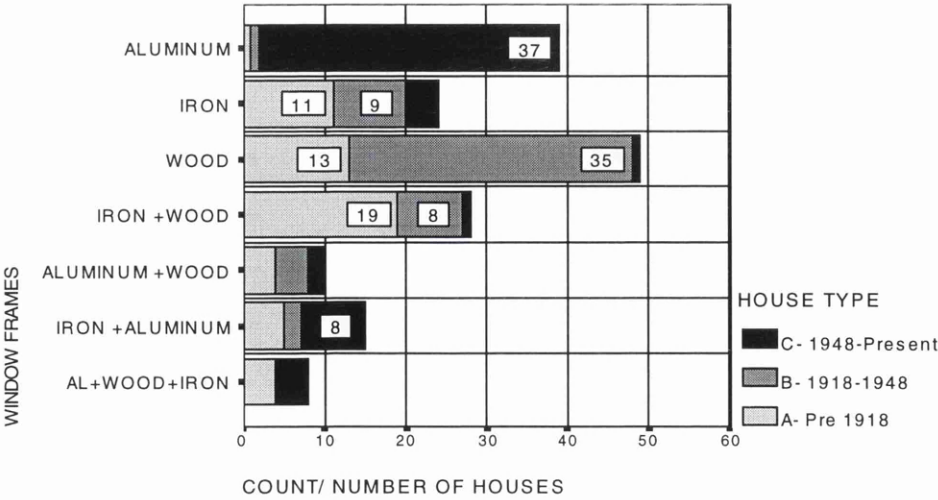


Table 5.29: The distribution and percentage of window frame materials according to house type.

	HOUSE TYPE					
	A- Pre 1918		B- 1918-1948		1948-Present	
	WINDOW FRAMES		WINDOW FRAMES		WINDOW FRAMES	
	Count	%	Count	%	Count	%
ALUMINUM	1	1.8%	1	1.7%	37	64.9%
IRON	11	19.3%	9	15.3%	4	7.0%
WOOD	13	22.8%	35	59.3%	1	1.8%
IRON +WOOD	19	33.3%	8	13.6%	1	1.8%
ALUMINUM +WOOD	4	7.0%	4	6.8%	2	3.5%
IRON +ALUMINUM	5	8.8%	2	3.4%	8	14.0%
AL+WOOD+IRON	4	7.0%			4	7.0%

Figure 5.20 and table 5.29 indicate that in type A houses, iron and wood are the most commonly used materials for window frames (19 houses out of 57 (33.3%) have iron and wood frames, 13 houses (22.8%) have wooden frames, and 11 houses (19.3%) have iron frames). Among type B houses, the most commonly used material is wood (35 houses out of 59 (59%) have wooden frames, while only 8 houses of the same sample (13.6%) have iron and wood frames). In type C, however the most used material is aluminium (37 houses out of 57 (64%) have aluminium frames).

It could be inferred that aluminium frames found in type A and B houses are not original, but were added later, and that some the old houses have aluminium frames only for some windows. This is why aluminium and wood or iron are found in some houses with other materials.

II. The physical condition of the house

The sample houses are investigated in terms of their interior and exterior physical condition. The scale used to measure the physical condition of the house consists of three levels: good, moderate, and bad condition.

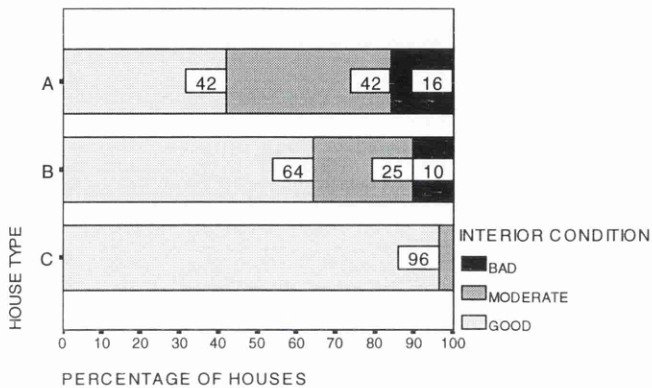
The interior condition is evaluated as good if the inside of the house is in a good state of repair; e.g. walls and ceilings are plastered, and painted with no cracks, and floor tiles, window frames, doors, and other wood and aluminium work are in a good state. Exterior facades are evaluated as being in good condition if they have well maintained stone work. Moderate internal condition described houses needing minor interior repairs

due to slight defects such as lack of paint or small cracks. Houses with slight exterior problems such as small cracks in the stone work were evaluated as moderate. Bad interior conditions denote deteriorating houses needing major repairs which are more than what would be provided by regular maintenance. Bad exteriors are those where the stone work of the facades is in need of major repairs e.g. cracked walls, or a large percentage of broken stones ..etc.

a) The interior condition of the house

Figure 5.21 indicates that the interior condition of type A houses ranges between good and bad, however the larger percentage of houses are in good or moderate condition. Type B houses are in a better condition. Most of them have good interior condition. Type C houses are in a better condition. Most of them have good interior condition.

Figure 5.21: A stacked bar diagram of the Interior condition of sample houses by the house type.

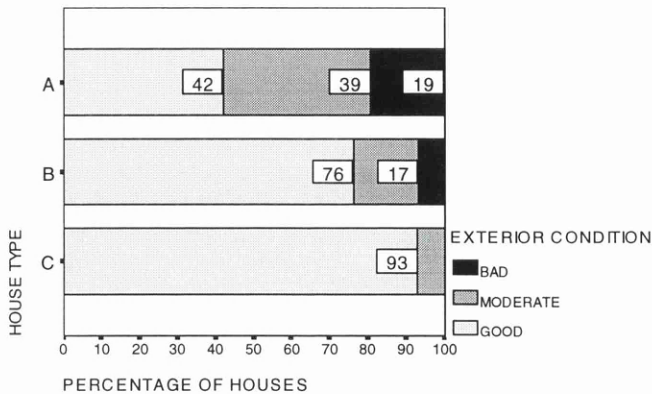


The interior condition of type C houses is the best if compared with the other two types of houses A, and B. The majority of C type houses are in a good condition.

b)The exterior condition of the house

Figure 5.22 indicates that the exterior condition of type A houses ranges from good to bad. Type B houses are in a moderate to good condition, with more houses in a good condition, while the majority of type C houses are in a good exterior condition.

Figure 5.22 : stacked bar diagram of the exterior condition of sample houses by the house type.



In the following table a comparison between the exterior and the interior physical condition of houses of each of the three types is illustrated.

Table 5.30 shows that more houses among type A are in good exterior condition and good to moderate interior condition, while it can be indicated that among type B houses, a large percentage have good interior and exterior conditions. Type C houses, however, have the highest percentage of houses with good exterior and interior conditions.

Table 5.30: Distribution of sample houses by exterior and interior condition

				GOOD	MODERATE	BAD
HOUSE TYPE	A- Pre 1918	EXTERIOR	%	42.1%	38.6%	19.3%
		INTERIOR	%	42.1%	42.1%	15.8%
	B- 1918-1948	EXTERIOR	%	76.3%	16.9%	6.8%
		INTERIOR	%	64.4%	25.4%	10.2%
	C- 1948-Present	EXTERIOR	%	93.0%	7.0%	
		INTERIOR	%	96.5%	3.5%	

5.3. CONCLUSIONS

The statistical descriptive analysis carried out in chapter five revealed that major differences existed between the three types of houses. Nevertheless type C, which represents new houses designed by professional architects could be distinguished from the other types, A and B which were designed and constructed by master builders and other people in the building profession before the introduction of architects in Palestine in general and Nablus in particular. By reviewing the results of data analysis from chapter five, the main characteristics of each type of houses will be revealed.

Type A house (the traditional house): They were built before 1918 and located within the old city of Nablus. A large percentage of houses among the sample were constructed during the 19th century, and almost half of the houses surveyed were owned, however the mean total floor area of rented houses of type A had the lowest figure among the three types. The number of stories of house type A were 1- 3. The survey indicates that among the sample only type A had three story houses. The mean total floor area of type A houses was 110 square meters and the mode of number of rooms per house was 3. Houses of type A were mainly courtyard houses.

The family size of type A houses was 7 persons per household, but the data analysis showed that the total floor area, and number of rooms did not respond to change in family size. The building material used in type A houses is mainly stone; iron and wood were used for the window frames of the sample. The physical condition of a large percentage of houses was moderate from both the outside and the inside.

Type B house (the colonial house): They were built during 1918- 1948 and are located outside the old city of Nablus. A large number of houses among the sample were constructed during the thirties and the forties. Ownership ratio was approximately 50% among the sample houses surveyed; owned houses had a relatively larger total floor area compared to rented.

Most of the houses of type B were one story houses, and had the largest figure among all the sample houses of the three types. The mean total floor area of type B houses was 160 square meters and the mode of number of rooms per house was 4. Type B houses mainly had central halls in the majority of the houses surveyed.

The family size of type B houses was 6 persons per household, however the study revealed that there was no relation between the total floor area, the number of rooms, and the family size within the sample houses surveyed.

The building material for all houses of the sample was stone, and wood was the most used material for window frames. The physical condition of the houses of type B was mostly good from the outside compared to good to very good from the inside.

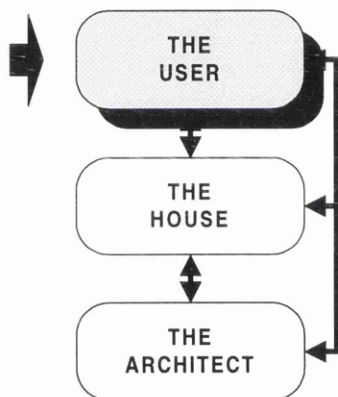
Type C house (the modern house): They were built during 1948- 1996 and located outside the old city of Nablus. Most of the houses among the sample were constructed during the seventies, the eighties, and the nineties. The sample surveyed showed a very high ratio of owned houses compared to rented. Owned houses had the largest figure of mean total floor area among the whole sample of the three types.

Among the sample surveyed the houses were one and two stories high, and the ratio of one story: two story houses was approximately 1. The mean total floor area of type C houses was 260 square meters, and the mode of number of rooms per house was 7.

Gardens were frequent in houses of the sample surveyed. The family size of type C houses was 6 persons per household; as a result of data analysis type C houses were the only house type among the sample to show a positive relationship between family size and both total floor area and number of rooms of houses. The building material used for construction was stone, and aluminium was the most used material for window frames. The physical condition of houses of type C was mostly very good from the outside and the inside.

5.4. REFERENCES

- AL- HATHLOUL, S. (1975): *Tradition, Continuity and Change in the Physical Environment : The Arab- Muslim City*, Ph.D. Thesis, Harvard University.
- CASWELL, F. (1995): *Success in Statistics*, third edition, John Murray publishers, London, Unit 7.
- CLEGG, F. (1997): *Simple Statistics, A course Book for the Social Sciences*, Cambridge University press, United Kingdom, Unit 1-4.
- GEORGE, D.& MALLERY, P.(1995): *SPSS/PC+ Step by Step: a simple guide and reference*, Wadsworth Publishing Company, Belmont.
- HAKIM, B.S.(1986): *Arabic- Islamic cities: Building and Planning Principles*, KPI Limited and Routledge & Kegan Paul plc, London.
- HUGH, M., ROBERTS, P. (1979): *An Urban Profile of the Middle East*, Croom Helm, London, pp.40.
- NACHMIAS, D.& NACHMIAS, C. (1976): *Research Methods in the Social Sciences*, Edward Arnold, London Ch. 9.
- PETHERBRIDGE, G.T. (1978): “ Vernacular Architecture: The House and the Society”, in Mitchel ed., *Architecture of the Islamic World*, Thames and Hudson, London, pp.197-200.
- QAMHIEH, K.(1992): *Saving the Old Town of Nablus, A Conservation Study*, Unpublished Ph.D. Thesis, Mackintosh school of architecture, University of Glasgow, UK, Ch.5.
- SENAN, Z. (1993): *Political Impact on the Built Environment: Colonisation and the Development of place Identity. The case of the rural west Bank (Palestine)*, Unpublished Ph.D. Thesis, Newcastle Upon Tyne, pp. 256.
- SPSS Base 7.0 for windows (1996), SPSS Inc., Chicago
- WEISS, N.A. (1995): *Introductory Statistics*, Fourth edition, Addison - Wesley Publishing Company, Inc., New York, England, Paris, pp. 14, 51.
- YOUSOF, M.A.(1996): *Conservation of Cultural Heritage in the West bank: under occupation. The case of the old city of Nablus*, York university, (Ph.D. Thesis), CH 7.
- ZA'NON,F. (1991): *Fertility Preferences of Arab Population in the West Bank*, unpublished Ph.D. Thesis, Glasgow University.



6. Chapter Six

Bivariate Analysis of User Attitudes Towards the House Image and Layout: (Exploring Relationships)

The Analysis of Part Two of the House User Questionnaire

6.1. INTRODUCTION

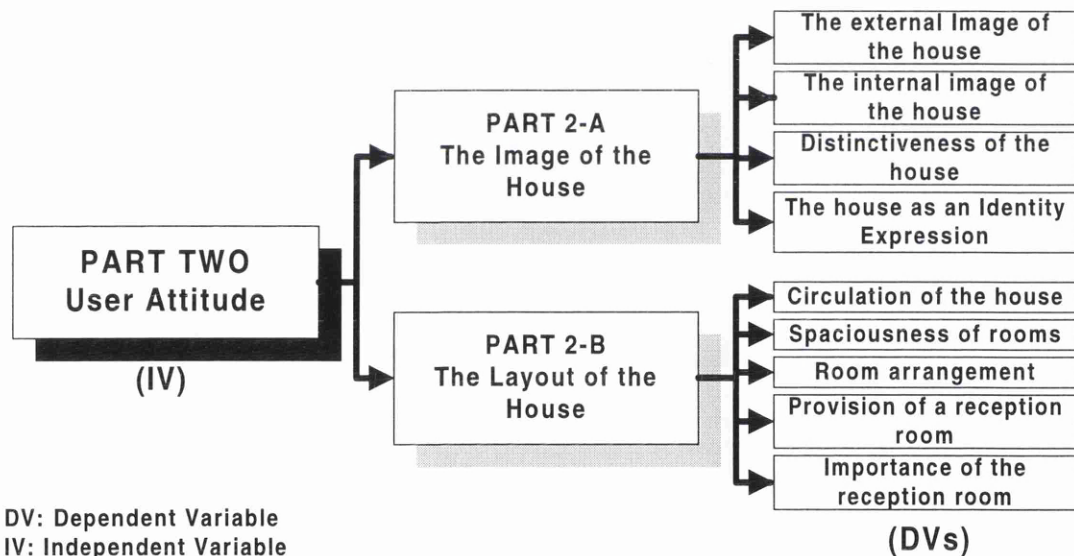
Chapter six gives an account of the findings of Part Two of the house user questionnaire. It investigates issues related to some of the users' attitudes towards their houses (for definition of attitudes refer to chapter one).

This chapter consists of:

Part Two (A), which examines the user attitude towards the image of his/ her house with respect to a number of dependent variables, namely: the external and the internal image of the house, the distinctiveness of the dwelling, and the house as an expression of the user's identity.

Part Two (B), which investigates the user attitude towards the layout of his/ her house with reference to some dependent variables (DVs), specifically, the circulation inside the house, spaciousness and arrangement of rooms; and the reception room. Figure 6.1 indicates the structure of chapter six and its two sections.

Figure 6.1: The structure of chapter six showing the sub-sections of part 2 and different variables.



The findings of Part Two will be examined in relation to the house type as an independent variable (IV), therefore the three house types A (the traditional house), B (the colonial house), and C (the modern house) will be assessed in the light of their users' attitudes. Then bivariate analysis, which is the analysis of data obtained from observing values of two variables, will be conducted to explore relationships between different variables.

Accordingly, an in depth analysis of the users' attitudes towards the three house types could reveal issues linked to the transformation of house design in Palestine. Also, an appraisal for the three house types in the light of their users' attitude might unveil matters of connection related to the architect's role in the transformation.

For the data analysis inferential statistics in conjunction with descriptive statistics is used throughout this and the following chapters. The Statistical Package for Social Science (SPSS, PC+, Windows Base) is used for conducting different statistical tests.

6.2. AN OVERVIEW OF STATISTICAL TECHNIQUES USED

Part Two of the questionnaire (A+B) examine the user attitude towards his/ her house in terms of nine variables. Each of these variables will be considered as a dependent variable (DV) next to the house type as one independent variable (IV).

Inferential statistics are described by Weiss (1995:6) as consisting of "methods for drawing and measuring reliability of conclusions about a population based on information obtained from a sample of the population". They will be used to analyse the data, test the results, and investigate relationships between different variables, and thus conclusions can be drawn.

For the purpose of this study one way analysis of variance (ANOVA) will be adopted as an inferential method for comparing the means of the three populations of the questionnaire survey, specifically, the *Kruskal -Wallis* one way analysis of variance test.

Also, the Median test for independent k sample will be conducted to compare the medians of the three populations, thus results of both tests will be compared to explore variability of distributions among the three groups of houses investigated. *Spearman* and *Kendall* rank correlation tests will also be used to determine association and level of correlation between selected variables.

Furthermore different descriptive measures to be used are *measures of central tendency*, the mean , the median , and the mode, simultaneously with measures of spread of the distribution, the maximum, the minimum value and the range.

6.2.1. The One Way Analysis of Variance ANOVA:

Essentially the house user questionnaire survey was based on the subdivision of the sample houses into three groups, each representing a house type. Therefore the number of populations involved in this study is three depending on the three groups identified. The one way analysis of variance (ANOVA), which provides methods for comparing the means for more than two populations, has been chosen. It is called the one way analysis of variance because it compares the means of populations classified in one way. It also involves the analysis of the variation in the sample data (Weiss, 1995).

Analysis of variance is the statistical technique used to test the *null hypothesis* that several population means are equal (Norusis, 1986). Based on the variability in the sample it determines if there is a reason to consider that the population means are equal or not. The analysis of variance compares the within groups and between groups estimates of variability. Therefore by looking at the variability, conclusions can be made as to whether the *null hypothesis* can be refuted or confirmed.

6.2.2. Nonparametric Tests for k Independent Samples; the Kruskal-Wallis H Test (K- W test) and the Median Test

The nonparametric test is different from the parametric test, since the latter is suitable for data which are of interval or ratio level, and can only be used on data derived from normal or nearly normal distribution. The parametric test is only used if the two samples have similar spread or have homogeneity of variance (Clegg, 1997: 85-86).

Alternatively, nonparametric methods do not require even approximate normality and can be applied regardless of sample size (Weiss, 1995: 469).

The **Kruskal Wallis (K-W)** test is a nonparametric one- way ANOVA statistical test for k independent sample. It examines whether several independent samples come from the same population (have the same mean) or not. It is based on ranks and requests an ordinal level of measurement. Therefore the K-W test will be carried out on the three groups of sample houses next to different variables to investigate if the mean ranks of groups differ significantly so the null hypothesis can be refuted or not.

The **Median** test for k independent sample is another nonparametric test for two or more groups; it compares whether the number of values below the grand median (median of all groups) differs from the number of values above the grand median for each group compared (George, 1995: 287). Thus the *Chi-square* analysis is used for the median test to calculate the significance level according to which the null hypothesis will be confirmed or refuted.

The null hypothesis H_0 assumes that there is no difference in the mean rank among the groups in relation to a specific variable.

Alternative hypothesis H_1 assumes that there is a difference between the mean rank among the groups in relation to the specific variable.

The level of significance $p \leq 0.05$ will be adopted for the K-W, and the Median tests throughout the study. The number of cases ($N = 173$), is the total number of houses involved in the study, which includes the three groups of houses, A, B, and C.

The comparison between results of the two tests (the K- W and the Median tests) will explore the shape of scores' distributions within groups, thus the Median test will eliminate the effect outliers (extreme cases/ results/ responses) might exert on the result as it involves the comparison between medians, while the K-W test compares the means of different groups including any extreme values found among distributions.

6.2.3. Correlation Tests: The Spearman's and Kendall's Rank Correlation Tests

These two tests are used for ordinal (rank) data to measure correlation between variables. Therefore normality is not required for calculating Spearman's rank correlation coefficient rho, and Kendall's tau-b. The value of the coefficient can range from -1 to +1, in this case:

If there is no relationship between two variables, the value of the coefficient is 0.

If there is a perfect positive linear relationship, the value is +1

If there is a perfect negative relationship, the value is -1 (Norusis, 1986).

Also: A significant positive relationship, i.e. correlation coefficient ≥ 0.05 .

A significant negative relationship, i.e. correlation coefficient $\leq - 0.05$.

Connolly and Sluckin (1971:154) provided a guide on the degree of relationship indicated by the size of the coefficients, where

0.90- 1.00 Very high correlation; very strong relationship.

0.70- 0.90 High correlation: marked relationship.

0.40- 0.70 Moderate correlation; substantial relationship.

0.20- 0.40 Low correlation: relationship so small as to be negligible.

However, some authors have argued that the size of the correlation coefficient and the significance level must be considered in tandem when exploring relationships between variables. The way in which statistical significance is calculated for a correlation coefficient is strongly affected by the number of cases for which there are pairs of data.

6.3. PART TWO OF THE HOUSE USER QUESTIONNAIRE: THE USER ATTITUDE TOWARDS HOUSE IMAGE AND LAYOUT

For measuring the user attitude in Part Two of the house user questionnaire, the Likert scale from 1 to 5 was used, where 5= strongly agree, 4= agree, 3= neutral, 2= disagree, and 1= strongly disagree. Users were asked to choose one of the five alternatives to determine their attitude regarding each of the statements of this part (see Appendix no.1 for full details of the house user questionnaire).

Data analysis in this chapter will include mainly the Kruskal- Wallis test and the Median test, which will be carried out on the three groups to test each of the DVs next to the house type and determine if the null hypothesis is to be confirmed or refuted. Then the observations of each variable will be graphically investigated in terms of within and between group variability.

Finally association between different variables will be explored using the *Chi*- square crosstabulations, then the Spearman's rho and Kendall's tau tests will be used to investigate levels (coefficients) of correlation between the significantly associated variables i.e. strength of the relationship. Finally, to evaluate the findings of part two, the results will be tested by comparison with the user's overall satisfaction. The Statistical Package for Social Science (SPSS/ PC+, Windows Base) will be used for data analysis. Moreover, for each variable a table of descriptive statistics is presented to illustrate the following information for each of the three house types; the number of cases, the maximum and minimum scores reported, the mean, the median, the mode, and the range. Then the discussions and conclusions will relate the result and the findings with the main propositions.

6.3.1. PART TWO (A) of the House User Questionnaire : The Image of The House

Part Two (A) investigates the way users relate to their environment by the meaning they associate with the exteriors of their houses and the way they express themselves and articulate their identity to strangers and friends or visitors.

The house is assigned personal and social functions, as a place to withdraw from society as well as a vehicle to win others' respect and appreciation. The form of the house, its exterior and interior, along with decoration and personal positions are a means enabling people to express themselves and communicate with their surroundings (Lawrence, 1987).

Four variables were chosen to test the user attitude towards the image of his/ her house, however the Kruskal-Wallis and the Median tests have been chosen to compare the mean of observations reported among the three groups of houses which represent the three house types (table 6.1, 6.2 respectively). Eventually, the tests' results will determine whether users' attitudes were significantly different between the three groups or not.

Table 6.1: Results of the Kruskal Wallis test of the four DVs of part 2A of the house user questionnaire in relation to IV (the house type)

DVs	Cases N	Type A MR	Type B MR	Type C MR	Chi- square	df	p	CV X ²
1- External image	173	75.83	94.69	90.21	5.024	2	0.081	5.991
2- Internal image	173	85.58	91.54	83.72	0.880	2	0.644	5.991
3- Distinguished house	173	89.98	83.34	87.81	0.648	2	0.723	5.991
4- Identity	173	77.33	83.98	99.79	6.744	2	0.034	5.991

CV= The tabulated critical value from the standard table of X². df= Degree of freedom (Clegg, 1997:175)

Table 6.2: Results of the Median test of the four DVs of part 2A of the house user questionnaire in the relation to IV (the house type).

DVs	N	Type A	Type B	Type C	Chi- square	df	p	CV X ²
1 External image	173	> 19 <= 38 Median = 4	27 32	24 33	1.954	2	0.376	5.991
2 Internal image	173	> 23 <= 34 Median = 4	24 35	19 38	0.837	2	0.658	5.991
3 Distinguished house	173	> 20 <= 37 Median = 4	19 40	19 38	0.110	2	0.947	5.991
4 Identity	173	> 12 <= 45 Median = 4	13 46	18 39	2.072	2	0.355	5.991

CV= The tabulated critical value from the standard table of X². df= Degree of freedom (Clegg, 1997:175)

Table 6.1 summarises the Kruskal Wallis test carried out on the three groups of houses representing the three house types A, B, and C by the four DVs. The mean rank for each group next to the four DVs is shown in the table with the *Chi*-square test results for the four variables (DV1= 5.024, DV2= 0.880, DV3= 0.648, DV4= 6.744); all values of *Chi*-square did not exceed the critical value of 5.991 under $p=0.05$ except for DV4, while DV1 reported a very close value. Thus the three groups did not vary significantly with the 3 DVs, therefore the null hypothesis is confirmed for the first three variables and refuted for the fourth.

As a result it can be concluded that there was no significant difference in the users' attitude towards the image of their houses among the three groups. However the three groups showed a significant difference with DV4 which is identity.

The Median test was also carried out on the three groups of houses by the four variables. Table 6.2 shows the number of values for each group above and under the grand median, i.e. 4; the median for all groups (George, 1995), and the *Chi*-square results for the four DVs (DV1= 1.954, DV2= 0.837, DV3= 0.110, DV4= 2.072). All values of *Chi*-square did not exceed the critical value of 5.991 under $p=0.05$. Therefore according to the Median test the three groups' median did not vary significantly with the 4 DVs.

To conclude, the two non- parametric tests for *k*- sample carried out on the three house groups suggested similar results for the first three DVs, which can imply that users of the three types of houses reported insignificant differences between results for the variables, external image, internal image, and distinctiveness of the house.

However the result of DV4 was reported differently by the two tests. Thus according to the K-W test there was a significant difference between groups mean concerning the DV, identity, while no significant difference was found between groups median for the same variable according to the Median test. This could suggest that outliers, which are extreme scores among distributions, influenced the result of the K-W test as it compares the mean scores between groups.

Therefore both tests (the K-W and the Median tests) revealed that users amongst the three groups of houses investigated did not differ in their caring attitudes towards the internal image of their houses and also had similar attitudes of keenness to distinguish their houses from others. However, more variation, almost significant between groups, in attitudes towards caring for the external image of their houses was reported. Also the three groups differed significantly in terms of their feeling towards the identity of their houses.

I. The external image of the house

Basically, the concern here is with the image passers by or strangers will have of the house. Senan (1993) stated that exteriors of the Palestinian village houses were controlled by the house design, landscape features, and outside decorations. However users had more freedom to express their personalities inside their houses. He also stressed the importance of the exterior features of the house as a means of communication of the family status, and values.

To measure the extent to which users among the three sample houses care about the external image of their houses the Likert scale of five points was used. Thus users were to determine the degree to which they agree or disagree with the statement “ I care about what people think of my house” by choosing one alternative out of the five suggested by the scale. Therefore 1 is the minimum while, while 5 is the maximum scale score (Arbitrary scale).

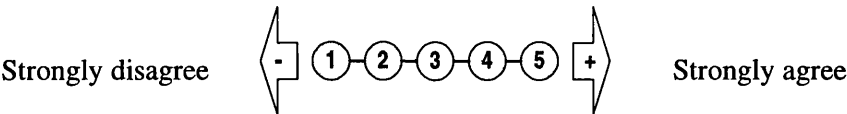


Table 6.3: Descriptive statistics for the DV the external image of the house

			Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	EXTERNAL IMAGE	57	5	1	3.56	4	4	4
	B- 1918-1948	EXTERNAL IMAGE	59	5	1	4.17	4	5	4
	C- 1948-Present	EXTERNAL IMAGE	57	5	2	4.04	4	5	3

Table 6.3 indicates that the average means for observations among the three groups were all above 3, falling between 3.56 and 4.17. Thus it can be suggested that users of

the three house types are inclined to have caring attitudes towards the external image of their houses.

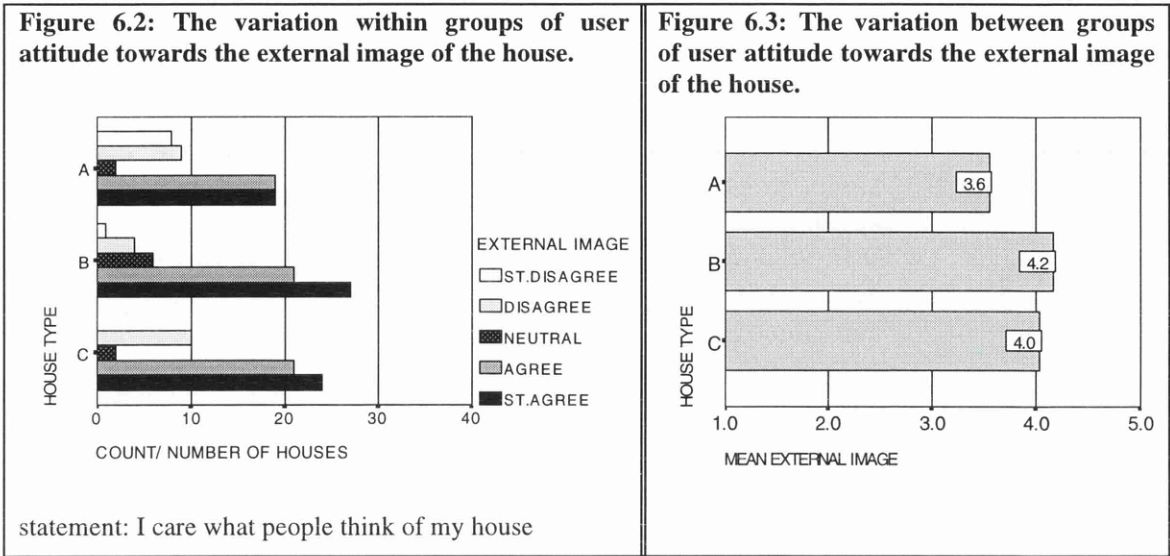
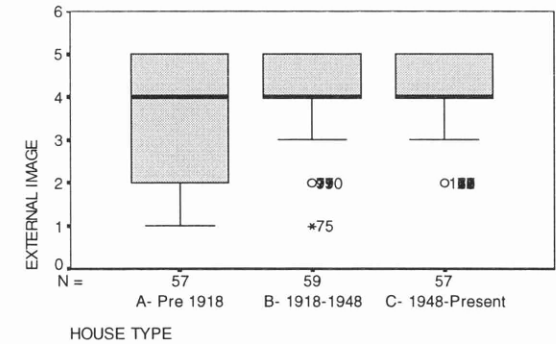


Figure 6.2 shows the variations of observations within groups, thus it signifies that most users among the three house types agree with the concept of caring about what people, or strangers think of their houses. On the other hand, figure 6.3 reveals the difference of attitude in between groups, which was not significant according to both the K-W and the Median tests. Comparing the average means for each of the three groups it can be suggested that type A houses have the lowest mean, while the other two groups B, and C have higher mean scores.

Figure 6.4: Boxplot of score distribution within groups for user attitude towards the external image of his/her house.



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

75% (3rd Quartile) of the cases among the distribution.

Figure 6.4 is a boxplot (also called ‘whisker’ diagram) which can be used to provide a graphical display of the centre and variation of a data set (Weiss, 1995:151). It represents the distribution of scores among the three groups, thus 50% of the cases fall within the box while the black line inside the box indicates the median. The two edges of the box (called the hinges) mark 25% (1st Quartile) and

Also, the two lines emanating from the box (called whiskers) show the spread of distribution, while outliers or extreme values are marked outside.

Therefore figure 6.4 indicates that the three groups have the same median value of 4 (agree). However the score spread among houses of type A is wider than that among the other two types, which implies more disagreement with the concept compared to that among the other two types of B and C houses. On the other hand among the distributions of group B and C outlier values existed. This can explain the difference in the value of the *Chi*-square; 5.024, 1.954 as a result of the K-W test and the Median test respectively.

In summary, the two tests revealed an insignificant difference between groups' attitudes towards the variable with more users among type A houses inclined to disagree with the statement "I care what people think of my house". Therefore the lower mean average scored for the user attitude of type A houses in comparison with the two other types could be due to the fact that type A houses are old houses inside the old city of Nablus which were built according to an introverted principle. Houses were oriented towards an enclosed courtyard, and care was not given to the simple blank street elevation; in contrast, all the architectural focus was dedicated to the courtyard. Consequently the relationship between the street elevation and the inside spaces is not as strong as that found in the detached houses of types B and C. Kostof (1992) described the street facade of the courtyard house as a back elevation and a boundary wall which does not contribute much to the street.

In contrast, users of type B houses reported the highest score among groups, which indicates a higher level of caring about the external image of their houses. This could be due to the extra attention dedicated to detailing and decorating the elevations of type B houses built during the colonial period in Palestine.

II. The internal image (perception) of the house

The concern here is with the interior of the house and if users care about the impression visitors have about their houses. Usually the interior of houses is intended for occupants and people who have close relationships with inhabitants, e.g. friends, relatives, and visitors.

The interior of the house often serves as a symbol of a family's status and values, therefore people seek a special arrangement of rooms and furniture which is distinctive and which satisfies their family needs (Altman, 1981). Moreover, Cooper (1974) stressed the importance of personalisation of interior spaces. Jin (1993) stated that people concede that home reflects their ideas, tastes, value, personalities, and characters.

Senan (1993) remarked that in the traditional houses of the Palestinian villages, identity and status were expressed by the size of the room and the type of furniture used. Comparatively in contemporary houses he found that uniqueness of the interior is reflected by the specialisation, number and variety of rooms. He concluded that the interior of the Palestinian village houses demonstrated the social status of the family. He also stated that people controlled the interior of their houses and expressed their identity more that they did to the exterior which was not determined by user choice.

To measure their attitude, sample users among the three types of houses were to determine the extent to which they care about the internal image of their houses by choosing one of the five alternatives proposed by the Likert scale described earlier. Thus users were to decide to what extent they agree or disagree with the statement “ I care about what visitors think of my house”.

However among type A houses, which are mainly introverted courtyard houses, courtyards were not considered as interiors because these spaces, although enclosed by four walls, are not used as interior spaces for climatic reasons especially during winter.

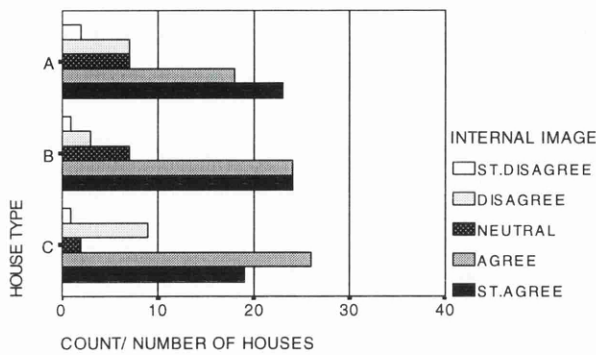
Table 6.4: Descriptive statistics for the DV The internal image of the house

			Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	INTERNAL IMAGE	57	5	1	3.93	4	5	4
	B- 1918-1948	INTERNAL IMAGE	59	5	1	4.14	4	4	4
	C- 1948-Present	INTERNAL IMAGE	57	5	1	3.93	4	4	4

Table 6.4 indicates that the average mean of observations recorded for the sample houses among the three house types have very close results around 4. Figure 6.5 suggests the variations or the distribution of observations within groups, however very slight variation is revealed by figure 6.6 which shows the variations between groups.

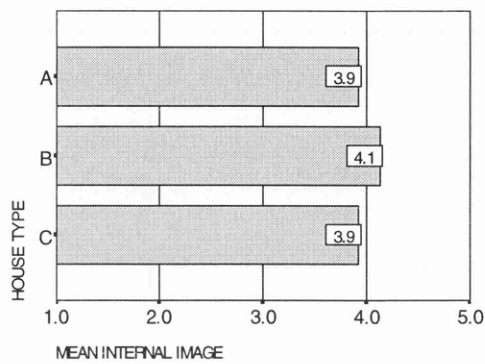
Therefore as was determined by the K-W and the Median tests carried out earlier, users' attitude among the three groups did not vary significantly.

Figure 6.5: The variation within groups of user attitude towards the internal image of the house.



Statement: I care what visitors think of my house.

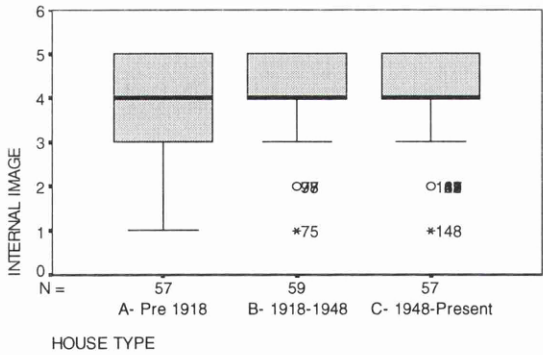
Figure 6.6: The variation between groups of user attitude towards the internal image of the house.



Thus it could be concluded that users of the three types of houses A, B, and C have a similar attitude of caring about the inside image of their houses. However type B houses

reported a slightly higher score and that could be attributed to the expressive interiors and the large scale (large total floor area for rooms, high ceilings, and large windows) of these houses. To get a graphical feel for the data, the boxplot diagram is applied to show scores' distribution around the median. Figure 6.7 indicates that the score distribution among type A houses is wider than the distribution among the other two groups of B and C houses, however outliers existed among the two groups of B and C.

Figure 6.7: Boxplot of score distribution within groups for users attitudes towards the internal image of their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

The median for the three house types has a value of 4, thus 50% of cases among B and C house types (inter- quartile range) are concentrated above the median which means that 50% of users among the two groups chose to agree or strongly agree with the

concept of caring about the internal image of the house. The rest of the cases among the two groups B and C fall above 3 and below the median 4.

Among type A houses, 50% of cases fall between 3 (neutral) and 5 (strongly agree) while the rest fall below 3, which can suggest disagreement. Results of the two tests of Kruskal- Wallis (Chi - square = 0.880) and the Median test (Chi - square = 0.837) carried out on the variable (the internal image) next to the house type yielded close results which can imply that outliers within the distribution of type B and C groups did not influence the result because of the wide spread of group A distribution. However both tests confirmed the null hypothesis that no difference existed between groups' attitude towards the variable under investigation.

Comparing the user attitude towards the outside and the inside image of his/ or her house, it could be concluded that most users among the three house types were inclined to adopt a positive attitude regarding caring about both the outside and the inside image of their houses, although it could be suggested that more consideration for the external image was reported.

Although group A reported the lowest levels for caring about the internal image of the house, when comparing the results of type A group for caring both about the external and the internal image of the house, it is indicated that more users among the group care about the internal image. This could be due to the introverted layout of these houses which emphasises the interior spaces of the house more than the exteriors.

It could be inferred that caring about the external image of the house means that users might consider the appearance of elevations, materials, colour, details and the way their house is related to its context. However for the internal image of the house users may place emphasis on the furniture, details of the interior, materials, colours and other aspects related to keeping the house clean, and well maintained.

It could be concluded that although users care about the external image of their houses (particularly B and C), they have little control on the house exterior compared to their freedom in mastering the interior. Therefore the exterior appearance (image) in the past was usually designed and controlled by the master builder, and today by the architect. (The architect and the design process of the house will be investigated in chapter eight).

III. The distinctiveness of the house

Investigation is focused here on whether or not users would like their houses to be distinguishable from other houses. The need to personalise and identify individual houses was brought forward by critics who attributed the failure of most mass housing to the architect's ignorance of user's needs, for example the need for identification with one's house (Egelius, 1980).

Houses, among the three groups investigated, were made distinctive in different ways; for example among type A houses, which were built pre- 1918 and located inside the old city of Nablus, the size of the house, determined by the social and economical standards of the family, differentiated the house from others. Choice of materials, decoration, and details of the interiors, along with the special care that was usually devoted to the enclosed courtyard, all gave strong definition to the house. On the whole among type A houses, distinctiveness was mostly achieved by differentiated and personalised interior spaces and enclosed courtyard (s) as the exteriors of houses were anonymous. The house entrance was the only articulated facade element used to express the owner's social and economical status (Robenson, 1982:218) (refer to *Chapter 2* for more details).

On the contrary among houses of type B, which were built during the British mandate in Palestine, exteriors played an essential role in distinguishing the house, as these houses were detached houses built outside the old city of Nablus according to planning regulations which allow for setbacks surrounding the house. Thus the house elevations started to acquire prominence in house design, therefore houses of type B were strongly distinguished; first of all their exteriors were differentiated by facade details and decorations, mainly entrances, windows, and stone detailing, then their interiors were distinguished by size, materials, and details (see *Chapter 2*, for more details).

Among type C houses, differentiation of the exteriors is achieved by the use of different materials, colors, stone details and special features such as arches. However interiors among type C houses can be made distinguishable by the use of various materials, colors, details and by the furniture (refer to *Chapter 2* for more details).

So among the three types of houses special treatments were adopted by users or architects were all to establish differentiation and distinction for houses either to express wealth, family status or social position. The main objective here is to detect the extent to which users, among the three types of sample houses, would agree with the questionnaire statement “ I would like my house to look distinguishable from other houses”. The Likert scale of five points (1- 5) was used.

Table 6.5: Descriptive statistics for the DV the distinctiveness of the house

			Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	DISTINGUISHED HOUSE	57	5	2	4.21	4	4	3
	B- 1918-1948	DISTINGUISHED HOUSE	59	5	2	4.02	4	4	3
	C- 1948-Present	DISTINGUISHED HOUSE	57	5	2	4.12	4	4	3

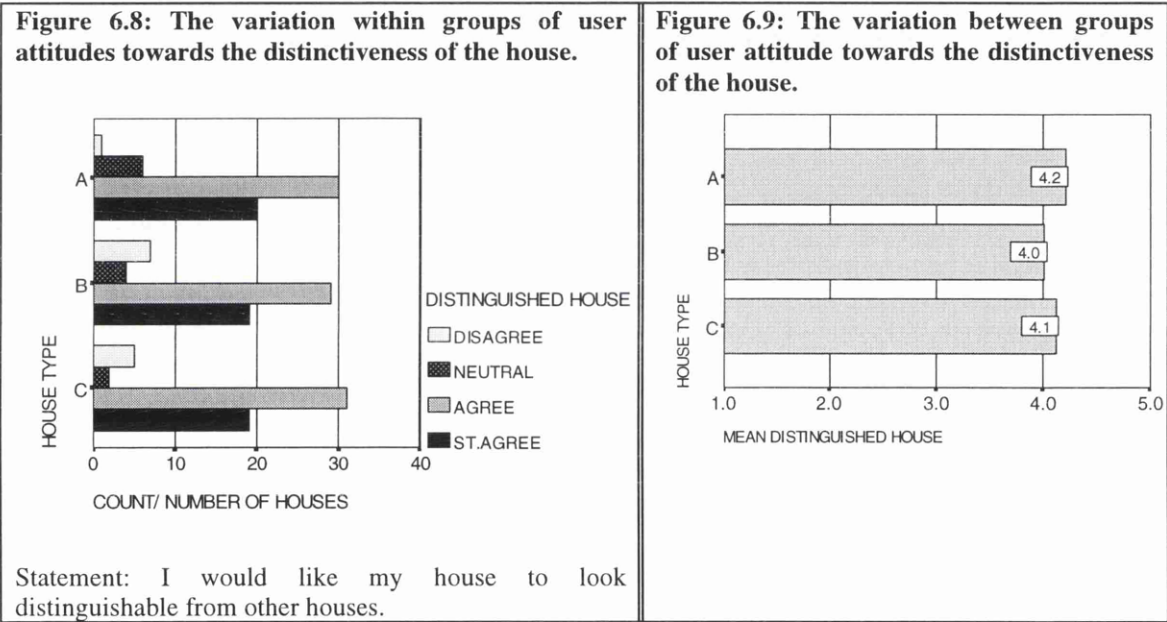


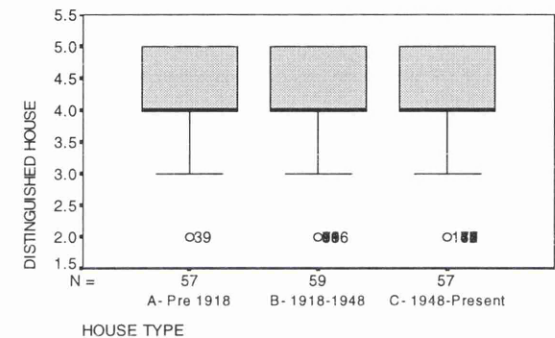
Table 6.5 demonstrates that there were slight differences between the average means of scores reported from observations of the three groups. Figures 6.8 and 6.9 respectively indicate within and between group variations. Thus the average means of observations among users of the three house types were almost 4 and above, which can suggest that users of the three house types A, B, and C have similar positive attitudes towards the need to distinguish their houses from others.

According to the K-W test carried out earlier, no significant differences in attitudes were indicated among users of the three house types; *Chi- square* = 0.648. The value of *Chi-*

square did not exceed $CV= 5.991$ under $p\leq 0.05$, therefore the null hypothesis was confirmed that no difference existed between groups' attitudes towards the variable.

Figure 6.10 indicates that the three groups of houses have similar median value of 4, furthermore they have similar scores distribution spread. Thus 50% of the cases among the three groups fall above the median i.e. between 4 and 5 which can suggest that users of the three types of houses are inclined to agree with the statement. Nevertheless outliers existed among the three groups and this can explain the difference in the results in *Chi*- square values of the K- W and the Median tests.

Figure 6.10: Boxplot of score distribution within groups for users attitudes towards the distinctiveness of their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

The overall result of investigation could point to the users' contribution to the transformation of house design in Palestine, as in their attempt to differentiate their houses, users could urge architects to implement new concepts of design and introduce new schemes which will gradually cause changes.

IV. The house as an identity expression

Identity is the condition of being one thing and not another or the unchanging nature of something under varying conditions (Rapoport, 1981). Benswessi (1987) has defined identity as the persistence of sameness with oneself, which allows one thing to be differentiated from others.

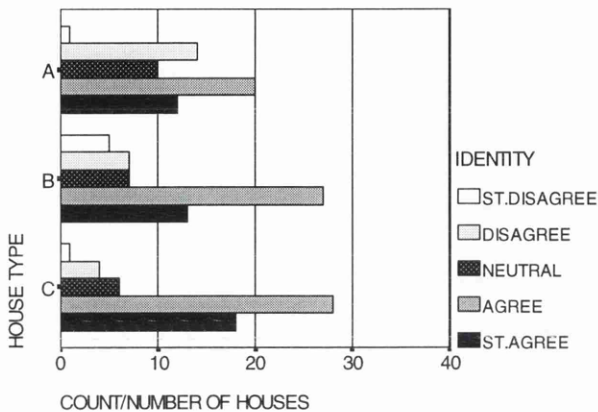
Cooper (1974) argues that the house is a symbol of self, while Rapoport (1969) considers the dwelling as a non verbal sign of group identity. However home environment was used as a symbol of identity, and it corresponds to social class, values, and personal preferences (Jin, 1993).

Using the Likert scale of five points, users of the three types of houses were to determine the extent to which they agree or disagree with the statement “ my house reflects my identity”.

Table 6.6: Descriptive statistics for the DV Identity

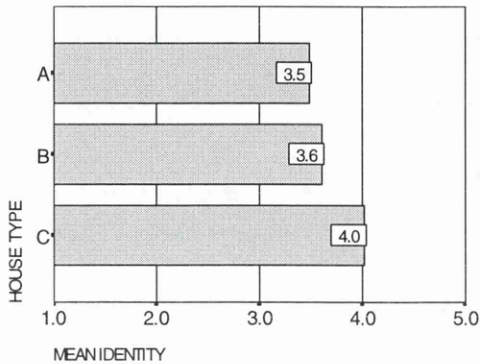
		Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE A- Pre 1918	IDENTITY	57	5	1	3.49	4	4	4
B- 1918-1948	IDENTITY	59	5	1	3.61	4	4	4
C- 1948-Present	IDENTITY	57	5	1	4.02	4	4	4

Figure 6.11: The variation within groups of user attitude towards the house as an expression of identity.



Statement: My house reflects my identity.

Figure 6.12: The variation between groups of user attitude towards the house as an expression of identity.



The K-W test carried out on the three groups of houses by the DV4 (identity) has yielded that a significant difference existed between the three groups regarding the user attitude towards considering that their houses reflect their identities. Table 6.6 indicates that the average mean of observations among the three groups of houses ranges between 3.49 to 4.02. Figure 6.11 suggests the within group variation of attitude, while figure 6.12 reveals the variation between groups. The two figures show that although users of the three house types have a positive attitude towards considering their houses a reflection of their identity, users of type A houses reported the lowest average mean.

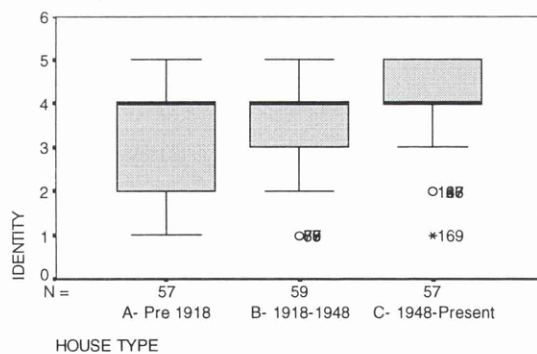
From the previous results it could be concluded that most users of type C houses, which represent the new houses, believed that their houses reflect their identity, while most users of type B were less convinced of that. Type A, which represents the old houses of the old city of Nablus, had a position between neutral to agree towards the concept. It could be inferred that traditional houses of type A were not built to express individual identity. Alexander(1964) argued that building construction in preliterate societies was controlled by rigidly maintained accepted rules, while Rapoport (1981) remarked that in

traditional cultures individual identity expressed through dwellings is rather unimportant.

However, in traditional societies where social relations and values are collective, group identity is very significant. Thus participation in group activities is very important and dwellings are conceived as a shelter and a place for group activity. They are less conceived as a means for personal display and uniqueness (Senan, 1993).

As discussed previously, the K- W test yielded significant differences between groups for the variable identity (*Chi*- square = 6.744, CV= 5.991, significant at level $p= 0.05$). However when conducting the Median test for k independent samples the result revealed insignificant differences between the groups' median for the variable; (*Chi*- square = 2.072, CV= 5.991, insignificant at level $p= 0.05$). However the difference in results can be due to some extreme values existed among houses of type B and C as will be explored by the boxplot of figure 6.13.

Figure 6.13: Boxplot of score distribution within groups for users attitudes towards the house as an identity expression



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 6.13 indicates that the three groups of houses reported the same median for their scores (4), and that the distribution among the groups was varied in terms of spread and intensity. Although the Median test revealed possible insignificant differences between groups, the score distribution within groups can point to less identity association with houses of type A and that could support the K- W test and the discussion according to test results.

Differences in attitudes between groups could have existed because each group represents one of the three types of houses which has its own special characteristics, design concept, and features. Therefore each of the three types communicate differently with the environment, hence people conceive the three types in contrasting ways.

Thus type A houses, located inside the old city of Nablus, even though they represent the traditional Palestinian urban house, can be associated with poverty and low social standard. On the contrary, new houses built according to international trends in architecture are conceived by the many people as a symbol of modernity, and high levels of social and economical standards (this will be further investigated in Chapter 9). Houses of type B can be perceived by the public as better than type A because they are built outside the old city and some are still inhabited by their owners, who have maintained them well, while owned houses of type A are occupied by poorer members of the owner families. Nevertheless people may consider type B houses old and still prefer new modern houses. (this will be further investigated in chapter nine when preference of old and new architecture will be examined).

V. Bivariate correlation between variables of PART TWO (A) of the House User Questionnaire: The Image of the House

To examine possible associations between variables of Part Two (A) , *Chi- square* crosstabulation statistical technique was conducted on each sample of the three house types. Significant interrelationships are listed in table 6.7.

Table 6.7 : Chi- square crosstabulation results between associated variables of part 2A of the house user questionnaire

	N	X ²	DF	AP	CV
Type A houses					
- The distinctiveness of the house by the house as an identity expression	57	23.574	12	0.023	21.03
-The external image by the internal image	57	75.948	16	0.00	26.30
Type B houses					
-The house as an identity expression by the interior image of the house	59	28.820	16	0.025	26.30
-The house as an identity expression by the exterior image of the house	59	29.617	16	0.020	26.30
- The exterior image by the interior image of the house	59	134.834	16	0.000	26.30
Type C houses					
- The exterior by the interior image of the house	57	108.959	12	0.000	26.30

CV of X² . X² must be ≥ than the stated value of CV to be significant at p= 0.05 (Clegg, 1997: 175)

Furthermore, both the Spearman’s and Kendall’s rank correlation tests were conducted on associated variable to determine the level of correlation (table 6.8).

Table 6.8: Results of Spearman's and Kendall's tests for Correlation between different variables of part 2A of the house user questionnaire

IVs by DVS	Spearman's rho Test			Kendall's tau- b		P
	N	rho	AP	tau-b	AP	
Type A houses						
The distinctiveness of the house by the external image of the house	57	0.408	0.002	0.359	0.002	0.05
The distinctiveness if the house by the internal image of the house	57	0.427	0.001	0.383	0.001	0.05
The external image by the internal image of the house	57	0.594	0.000	0.557	0.000	0.05
Type B houses						
The external by the internal image of the house	59	0.645	0.000	0.602	0.000	0.05
User's overall satisfaction by the internal image of the house	59	0.416	0.001	0.366	0.001	0.05
User's overall satisfaction by the external image of the house		0.446	0.000	0.392	0.001	0.05
Type C houses						
The external by the internal image of the house	57	0.539	0.000	0.501	0.000	0.05

CV of Spearman's rho. Rho must be equal to or more than the stated value to be significant

For N= 30, CV= 0.364 at $p \leq 0.05$ (Clegg, 1997:182)

N= 55, $r \geq 0.266$ at level $p = 0.05$, 0.345 at level $p = 0.01$ (Mark, 1996: 381)

N=60, $r \geq 0.254$ at level $p = 0.05$, 0.330 at level $p = 0.01$ (Mark, 1996: 381)

The two nonparametric correlation tests revealed the levels of association between pairs of variables (table 6.8). The three house types yielded correlations between internal and external image of the house. Among **type A** houses (N= 57, rho=0.594, tau-b= 0.557, $p = 0.05$), 72% and 66.6% of users reported positive response for caring about the internal and the external house image respectively, while amongst **type B** houses (N= 59 rho=0.645, tau-b= 0.602, $p = 0.05$), 81.4% of users would care for the internal image of their houses compared to 77.4% who are concerned with the external image. Among **Type C** sample (N= 57, rho=0.539, tau-b= 0.501, $p = 0.05$), 78.9% care about the internal image of their houses compared to 79.9% who care about the internal image. These correlations among the three house types could imply that the sample users who care about the internal image of their houses also are concerned with the external image. It could be concluded that these users have an equal concern for the external as well as the internal image of their houses.

Correlation could suggest that users among the three house typologies showed concern for both external and internal image of their houses, nevertheless, with the exception of

type C sample, more concern was for the internal image, especially among type A houses which was attributed to its introverted lay-out.

Correlations were detected among **type A** houses between the variable distinctiveness of the house and both the internal image ($N= 57$, $\rho=0.427$, $\tau_b= 0.383$, $p= 0.05$), and the external image of the house ($N= 57$, $\rho=0.408$, $\tau_b= 0.359$, $p= 0.05$). This could lead to the conclusion that users among type A houses who would like to have their houses distinguished from others, are likely to care about the external as well as the internal image of their houses. Data analysis earlier in the chapter has revealed that 78.7% of users among type A houses would like to differentiate their houses.

It was also detected that among **type B** houses the two variables internal and external image of the house correlated with the user overall satisfaction ($N= 59$ $\rho=0.416$, $\tau_b= 0.366$, $p= 0.05$), ($N= 57$, $\rho=0.446$, $\tau_b= 0.392$, $p= 0.05$) respectively. Thus it could be concluded that overall satisfaction among type B users could be influenced to an extent by satisfaction with both the external and the internal images of the house. However, by comparing the size of correlation coefficients it could be suggested that the external image of the house could be of more influence on user's overall satisfaction compared to the internal image. External image could be linked with the richness of decoration found in type B external facades, while the internal image could be related to the impressive interiors of these houses (high ceilings, and large windows).

VI. Summary of the findings of PART TWO (A):The Image of the House

Investigation of the four variables related to the user attitude towards the image of his/her house could lead to some conclusions linked to the users' contribution to change in house design in Palestine.

It argues that, the majority of users among the three house types were inclined to care about the external image of their houses with a less caring attitude being shown among users of type A houses due to the fact that exteriors of the introverted type A houses were not intended to reflect an image of the house. However users of the three house types reported similar attitudes towards caring about the internal image of their houses, while agreement on the concept of differentiation, personalisation and distinction of one's house reached was among users of the three types of houses. On the other hand

with respect to considering the house as an expression of user’s identity, more users among type C houses were inclined to agree with the concept compared to less agreement among users of type A and B, thus more identity association was related to new modern houses and less was given for old traditional houses.

Therefore it could be inferred that because people care about the image of their houses and they would like to differentiate their houses from others, and they think that new modern houses express their identity more. So the means for differentiation and identity expression could be emphasised by the adoption of new architecture and the abandonment of traditional old architecture. This could be supported by the K- W test conducted on the user’s overall satisfaction next to the house type which yielded low levels of satisfaction among users of type A houses in comparison to high levels of satisfaction among type C houses (table 6.9).

Table 6.9: Results of K-W test of the DV user overall satisfaction next to IV the house type.

DV	Cases N	Type A MR	Type B MR	Type C MR	Chi square	df	p	CV X ²
1- Overall satisfaction	173	66.61	88.89	105.44	18.958	2	0.000	5.991

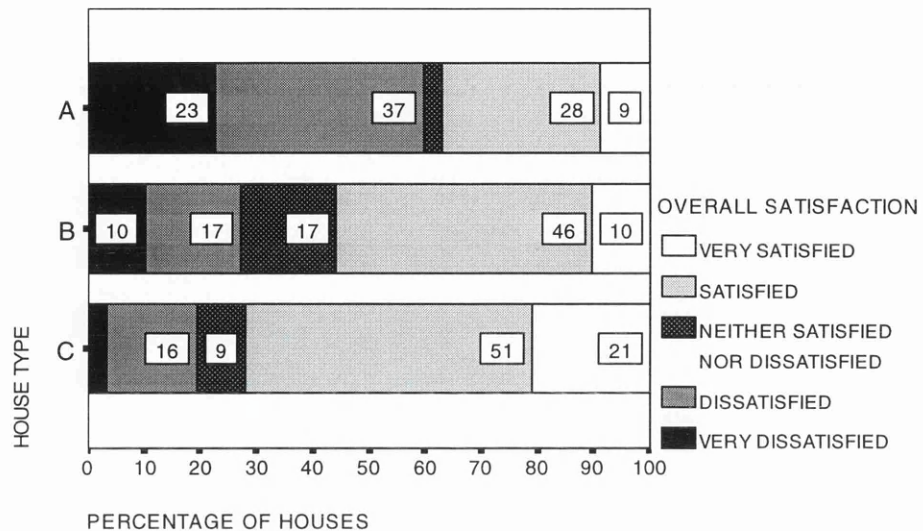
CV=The tabulated critical value from the standard table of X². df= Degree of freedom (Clegg, 1997:175)

Table 6.9 summarises the K-W test carried out on the three groups representing the three house types, A, B, and C by the DV user overall satisfaction with the house. The table shows the mean ranks (A= 66.61, B= 88.08, C= 105.44), and the results of the *Chi*- square test (18.958), which exceeds the critical value of 5.991 under p= 0.05 (Weiss, 1995). Therefore the three groups vary significantly with the DV, thus the null hypothesis (which assumes no differences in users overall satisfaction between groups) is refuted. As a result of the K-W test, it is concluded that there is a significant difference in the user over-all satisfaction between groups.

Figure 6.14 indicates the percentage of observations of users’ overall satisfaction among the three house types, therefore it is obvious that users of type C houses reported more satisfaction compared to the other two types B, and A. The K-W test and figure 6.14 imply that the user overall satisfaction varies between the three house types, however the lowest score reported was among type A houses, which represents old houses inside

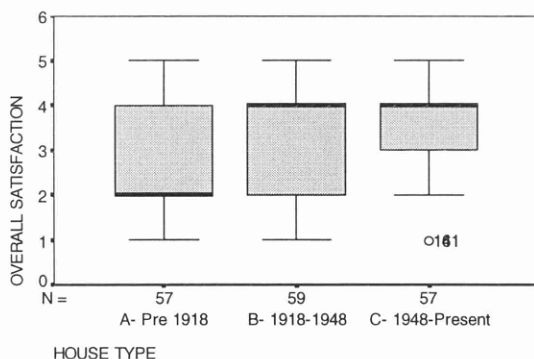
the old city of Nablus. Old houses outside the old city (type B) reported a higher score while the new houses (type C) had the highest recorded scores.

Figure 6.14: The percentage of overall satisfaction according to house type



The distribution of attitude within groups is suggested by figure 6.14 therefore it is obvious that more people replied satisfied or very satisfied among users of type C houses, in comparison with those users who were dissatisfied and very dissatisfied with type A houses. Users of type B houses reported a level of overall satisfaction lower than type C users and higher than type A users.

Figure: 6.15: Boxplot of score distribution of users' overall satisfaction.



Scale: 5= Very Satisfied, 4= satisfied, 3= Neither Satisfied nor Dissatisfied 2= Dissatisfied, 1= Very Dissatisfied

Figure 6.15 confirms the previous results. It reveals that more users among type A houses are dissatisfied with their houses (the median is 2, dissatisfied). More users among type B houses are satisfied (the median is 4 ,satisfied), while even more users among type C houses reported satisfaction (the median is 4, while 50% of the cases fall between 3 and 4, neither satisfied nor dissatisfied, and satisfied).

6.3.2. PART TWO (B) of the House User Questionnaire: The Layout of the House

Part Two (B) considers the user’s evaluation of his/ her house layout. The different layouts of the three generic house types were investigated in chapter five, and three types were identified. To examine the user attitude towards the layout of his/ her house, five variables were chosen and the Kruskal- Wallis - *H* test was carried out to look for the significance of difference among the three groups of houses. The *H* in the title of the test stands for the null hypothesis: that there is no significant difference among the three groups in terms of the user attitudes towards :

- a) Circulation space
- b) Spaciousness of rooms
- c) Arrangement of rooms
- d) Provision of a reception room
- e) Importance of the reception room

Table 6.10: The results of Kruskal Wallis test of the five DVs of part 2B of the house use questionnaire in relation to IV (the house type)

DV		Cases N	Type A MR	Type B MR	Type C MR	Chi square	df	p	CV X ²
1-	Circulation	173	46.78	76.56	138.03	104.240	2	0.000	5.991
2-	Spaciousness of rooms	173	64.72	103.01	92.71	20.649	2	0.000	5.991
3-	Arrangement of rooms	173	66.36	88.05	106.55	20.553	2	0.000	5.991
4-	Provision of a reception room	173	93.34	81.34	86.52	1.808	2	0.405	5.991
5-	Importance of the reception room	173	106.54	59.73	95.69	30.361	2	0.000	5.991

CV= The tabulated critical value from the standard table of X². df= Degree of freedom (Clegg, 199:175)

Table 6.10 summarises the Kruskal Wallis test carried out on user groups representing the three house types, A, B, and C by the five DVs. The table shows the mean rank for each group next to the five DVs, and the *Chi*- square test that resulted for the five variables (DV1=104.240, DV2= 20.649, DV3=20.553, DV4= 1.808, DV5= 30.361). All values of *Chi*- square exceed the critical value of 5.991 under p= 0.05 (Weiss, 1995) except for DV4. The three groups vary significantly with DV1, DV2, DV3, DV5, therefore the null hypothesis is refuted for the four DVs. For DV4 the three groups did not vary significantly and the null hypothesis is accepted only for DV4.

Consequently it can be concluded that there was a significant difference in the user attitude among groups towards the layout of their houses. This was suggested for all the DVs except DV4 which is the provision of the reception room.

Furthermore, the Median test, which is another non- parametric test, for k sample was carried out on the three house types by the five DVs to investigate the difference in user attitudes between groups and to test the null hypothesis, stated earlier, that there was no difference between groups' attitudes. Table 6.11 lists the Median test result.

Table 6.11: The results of the Median test of the five DVs of part 2B of the house user questionnaire in relation to IV (the house type)

DVs	N	Median	Type A	Type B	Type C	Chi- square	df	p	CV X ²
1 Circulation	173	> <= Median = 4	2 55	5 54	46 11	100.609	2	0.000	5.991
2 Spaciousness		> <= Median = 4	12 45	34 25	28 29	17.243	2	0.000	5.991
3 Arrangement of rooms	173	> <= Median = 4	9 48	12 47	19 38	5.325	2	0.070	5.991
4 Provision of reception room	173	> <= Median = 4	19 38	12 47	18 39	2.855	2	0.240	5.991
5 Importance of reception room	173	> <= Median = 4	19 38	1 58	13 44	19.567	2	0.000	5.991

CV= The tabulated critical value from the standard table of X². df= Degree of freedom (Clegg, 199:175)

Table 6.11 shows the number of values for each group which is above or under the median of the whole sample of the three groups i.e. 4. The *Chi*- square of the five DVs (DV1= 100.609, DV2= 17.243, DV3= 5.325, DV4= 2.855, DV5= 19.567). However values of *Chi*- square for DV1 ,2 ,and 5 exceeded the critical value of 5.991 under $p=0.05$, while it did not for DV4, therefore the null hypothesis is refuted for the four variables; DV1, DV2, DV3, DV5, and confirmed for one variable, DV4.

Comparing the results of the two non-paramatric tests for k sample, the K- W test and the Median test, it is concluded that according to both tests almost the same variables reported the same significant variability between groups except one variable which is the arrangement of rooms. Thus users of the three types of houses as maintained by both tests differed significantly in their attitude towards the layout of their houses in terms of; the circulation inside the house, the spaciousness of rooms, and the importance of the reception room. On the other hand users of the three types of houses had similar attitudes towards the layout of their houses in terms of the provision of a reception room.

One variable, DV3, the arrangement of rooms, reported different results, thus *Chi-square* values were; 20.553 according to the K- W test and 5.325 according to the Median test. This difference is attributed to different statistical procedures employed by both tests (one is based on the mean whereas the other is based on the median).

Results of both the K- W and the Median tests revealed that the layout of the three types of houses can be significantly different in terms of the convenience of their circulation, the spaciousness of their rooms, and their users attitude towards the importance of the reception room. However the arrangement of rooms reported contrasting results by the two tests, but it was revealed that arrangement of rooms could vary significantly among the three types of houses. On the other hand, both tests revealed no significant difference in users attitudes among the three groups towards considering the provision of the reception room as a priority.

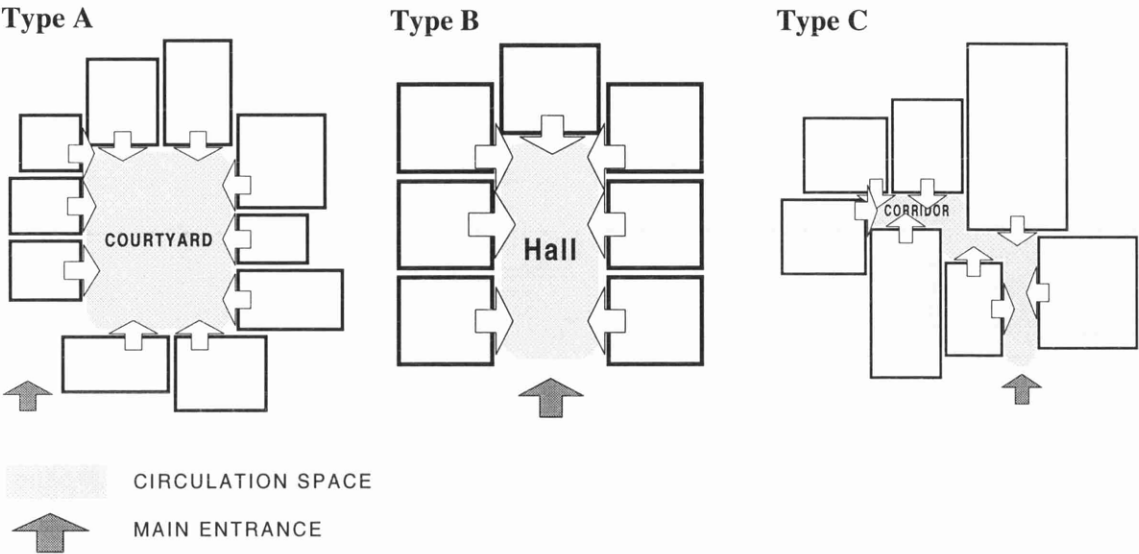
To measure users' attitudes towards the layout of their houses in terms of different variables, the Likert scale of five points was used to determine the extent to which users of the three types of houses agree or disagree with different questionnaire statements.

I. Circulation space: Ease of movement between rooms

Circulation and the use spaces or rooms represent the dynamic and static components in all buildings. Circulation is the means by which spaces are linked. It may be defined within a space specified for movement only or implied in other spaces of the house. (Clark, 1985: 5).

Among the three house typologies identified earlier, circulation space of type A layout was implied within the courtyard which used to function as the main active space of the house for different purposes as well as a connection point for all spaces around it. The same concept of central main circulation space was found among type B houses where the covered hall functioned as the main space that linked different rooms around it while, among type C houses the situation is totally different. Corridors and lobbies functioned as the circulation and connection space among these houses (figure 6.16).

Figure 6.16: Diagrams shoeing the circulation space within the layout of the three house typologies



On the Likert scale of five points, users of the three types of houses were asked to determine to what extent they think the circulation space within the layout of their houses is convenient. Thus results of the three house samples are reported in table 6.12, figure 6.17, and 6.18.

Table 6.12: Descriptive statistics for the DV circulation of the house

		Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	CIRCULATION	57	5	1	2.39	2	4
	B- 1918-1948	CIRCULATION	59	5	1	3.31	3	4
	C- 1948-Present	CIRCULATION	57	5	4	4.81	5	1

Figure 6.17: The variation within groups of user attitudes towards the circulation of the house.



Statement: I think that the circulation in my house in my house is convenient.

Figure 6.18: The variation between groups of user attitude towards the circulation of the house.

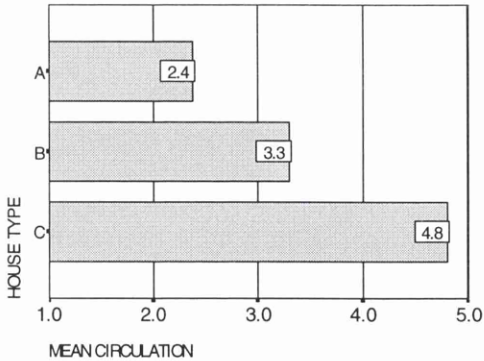
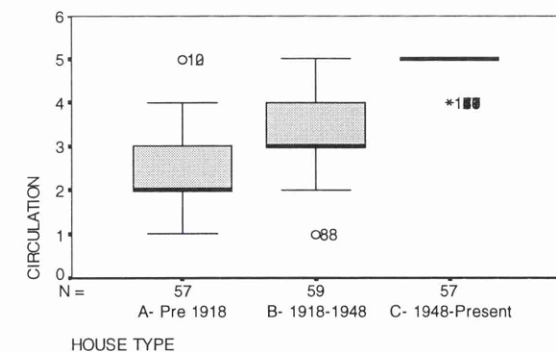


Table 6.12 indicates that the average mean of observations among type A houses was 2.39 which signifies that more than half of users among type A houses are inclined to think that the circulation system in their houses is not convenient, while among type B houses, the average mean of observations was 3.3, which is above the mean of the scale. Therefore this can indicate that users of type B houses have a positive attitude towards the convenience of circulation of their houses, and this can suggest that the circulation of type B houses is more convenient than that of type A houses, but it is not that convenient if compared to that of type C houses. Among type C houses the average mean for observations was 4.8, which signifies very positive users' attitudes which indicate very convenient circulation of their houses.

Figures 6.17 and 6.18 imply that attitudes vary significantly within and between groups. This was previously tested by the K-W test and the null hypothesis was refuted as a result.

The Median test of variance also yielded significant difference between groups for the variable circulation. To compare the K- W test and the Median test, *Chi*- square results were; 104.240, and 100.09 according to the two tests respectively thus they were significant at level $p= 0.05$, $df = 2$, $CV= 5.991$ (Clegg, 1997: 175). The boxplot of figure 6.19 shows the median and the distribution among the three groups.

Figure 6.19: Boxplot of scores distribution within groups for users attitudes towards the circulation of their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

On the other hand among type C houses the median was 5 (strongly agree) and 50 % of the cases fell around the median which can suggest high levels of convenience in circulation.

It indicates that among type A houses the median is 2 and 50% of the cases falling between 2 (disagree) and 3 (neutral) which can imply inconvenience in circulation. Among type B houses the median was 3 (neutral) and 50% of the cases among the distribution fall between 4 (agree) and 3 (neutral) which can signify more convenient circulation than type A.

Accordingly it could be concluded that among type A houses which represent the old houses pre-1918, circulation was evaluated by the users as not that convenient. Therefore it could be inferred that the nature of the courtyard layout could have generated inconvenience in circulation as all spaces of type A houses are connected via the open courtyard. However, problems of circulation could be intensified during winter when circulating between most of the spaces means moving between inside (which is warm) and outside (which is cold), and this might have been seen, by the user, as a cause of health and discomfort problems.

It could also be concluded that evaluation of circulation of type B houses by the users was better than type A house circulation, but it suggests a lower score than type C. Therefore it could be inferred that the central hall layout created some difficulties in circulation. It could be because of the centralised plan which controls the circulation and connects all used spaces via the central hall.

In contrast with the above mentioned two house types A, and B, circulation of type C houses was very positively evaluated by the users. It could be that these houses were more satisfactory to the users as they were designed by architects who could have improved circulation and reduced problems to the minimum. Therefore the improvement in circulation which was detected from type A and B to type C houses could be attributed to some extent to the architect, as type A and B were not designed by architects. However the architect's role in transformation of the Palestinian house design will be further investigated in chapter eight.

II. Spaciousness of rooms

Investigation here aimed at evaluating the spaciousness of rooms among the sample houses. Senan (1993) stated that size of the rooms was a decisive factor in determining the social status and expressing the identity of the family in the Palestinian village houses.

Spaciousness can be interpreted as the perceived size of the room in comparison to its actual size. Therefore users among the three types of houses were to determine on the Likert scale of 1- 5 the extent to which they think the rooms of their houses are spacious enough

Table 6.13: Descriptive statistics for the DV spaciousness of the house

		Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	SPACIOUSNESS	57	5	1	3.56	4	4
	B- 1918-1948	SPACIOUSNESS	59	5	2	4.42	5	3
	C- 1948-Present	SPACIOUSNESS	57	5	2	4.16	4	3

Table 6.13 indicates that the average mean of observations among type A houses was 3.6, while it was 4.4 among type B, and 4.2 among house type C. Figure 6.20 and 6.21 suggest that within and between group variations in attitudes towards the spaciousness of rooms which show significant differences according to both the K-W and the Median tests carried out previously (table 6.10, 6.11 respectively).

Figure 6.20: The variation within groups of user attitudes towards the spaciousness of the house.



Statement: I think that the rooms of my house are spacious.

Figure 6.21: The variation between groups of user attitude towards the spaciousness of the house.

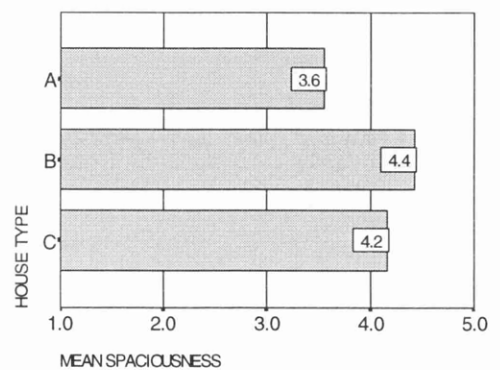


Figure 6.22 compares the medians and scores distributions among the three groups of houses. It indicates that among houses of type A; the median for observations is 4 while 50% of the cases were between 3 and 4 which can imply that most users of type A houses are inclined to between agreement and neutral position towards the spaciousness of rooms inside their houses.

On the other hand users of type B and C houses are inclined to agree and strongly agree that the rooms in their houses are spacious. The median among type B houses is 5 while it is 4 among type C houses, which can suggest that rooms among type B houses are more spacious than the other two types.

Figure 6.22: Boxplot of scores distribution within groups for users attitudes towards the spaciousness of their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Table 6.13, figure 6.20, 6.21 and 6.22 could indicate that type A houses have the lowest level of scores (3.6), which could imply that spaciousness of rooms among type A houses was the least convenient for use if compared with the other two types. This could be due to the structural system used in the construction of old houses which could have limited the space, or it might be that people evaluated the spaciousness of their rooms in comparison with their family size.

This was investigated in chapter five and the results revealed that there was no consistency between family size and the total area of the house or the number of rooms among type A houses.

It could also be that rooms of these houses were not introduced for use with modern furniture, or it could be the effect of lighting, and that small windows and insufficient lighting in type A houses made rooms look more cramped. Sufficiency of daylight among the sample houses will be investigated in chapter seven.

Spaciousness of rooms among type B houses was evaluated by the highest scores among the three groups, which could indicate that rooms of type B were spacious enough for their users. Spaciousness of type B houses could have been influenced by large floor area of rooms, high ceilings, as well as by the large windows used among these houses which could have provided rooms with sufficient daylight and made them look spacious.

Type C house was positively evaluated and the spaciousness of rooms was agreed upon by most of the users, but the mean value for C type observations was below that of type B. Thus, it could be inferred that architects who designed houses of type C considered implementing new standards and dimensions, according to different functions and usage. They also took special care to let in a sufficient amount of daylight into the house by providing an adequate size of windows. In other words, the architect planned

windows in such a way that provides a sufficient but not excessive amount of daylight inside. All of these are measures which contribute to making rooms among type C houses spacious, and their spaciousness could be accredited to the architect's design of these houses.

III. Room arrangement

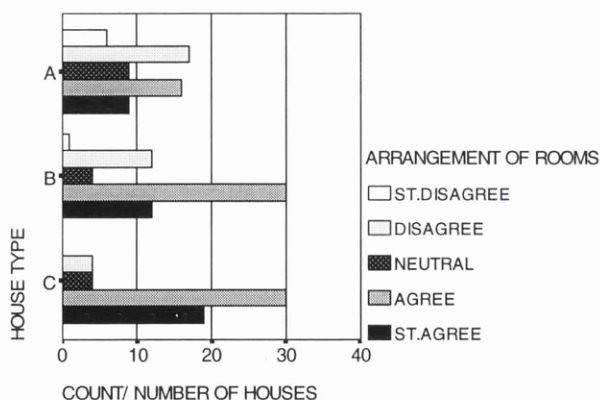
Investigation is focused on the user attitude towards the convenience in use developed as a result of the arrangement of rooms inside his/ her house. Therefore users were to decide on the Likert scale of five points the extent to which they think the arrangement of rooms in their houses is convenient for use.

The mean scores among the three distributions suggest that room arrangements of type A houses (mean score = 3.09) was the least convenient for use, followed by type B houses (mean score = 3.68), while type C houses reported the highest mean score of 4.12, which can imply that room arrangements among this type are more convenient for use compared to the other two types.

Table 6.14: Descriptive statistics for the DV Arrangement of rooms of the house

			Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	ARRANGEMENT OF ROOMS	57	5	1	3.09	3	2	4
	B- 1918-1948	ARRANGEMENT OF ROOMS	59	5	1	3.68	4	4	4
	C- 1948-Present	ARRANGEMENT OF ROOMS	57	5	2	4.12	4	4	3

Figure 6.23: The variation within groups of user attitudes towards the arrangement of rooms of the house.



Statement: I think that the arrangement of rooms inside my house is convenient for use.

Figure 6.24: The variation between groups of user attitude towards the arrangement of rooms of the house.

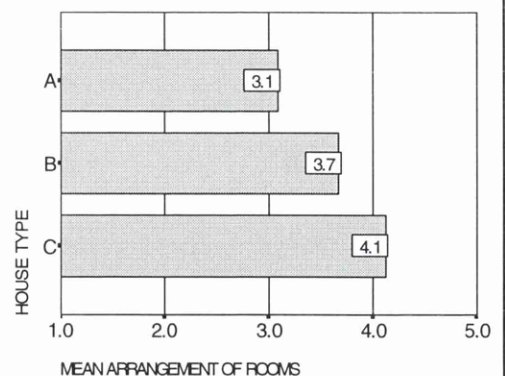
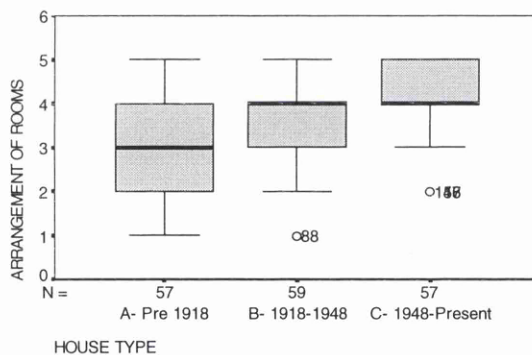


Figure 6.23 and 6.24 suggest variations within and between groups, which were tested significantly different by the K-W test; *Chi-square* value was 20.553 (at level $p=0.05$, $CV= 5.991$) (Clegg, 1997: 175). Thus figure 6.24 implies that improvements of room arrangements were experienced from type A to B and finally to type C.

Figure 6.25 indicates the distribution among the three groups' observations. Thus the median among A group is 3 while it is 4 within the other two groups of type B and C houses. However type A houses has a wider spread of distribution with 50% of the cases concentrated between 2 and 4 which means that most users of type A houses are inclined to a position between disagree and agree with no extreme scores among the distribution. The other two groups have a narrower spread of observations with extreme values (outliers), which could have influenced the result of the K- W test and yielded a difference of Chi- square values between the two tests.

Figure 6.25: Boxplot of scores distribution within groups for users attitudes towards the arrangement of rooms in their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Referring to chapter five, most of type A houses were courtyard houses, therefore room arrangements among these houses were basically around the courtyard, and there was no specification of function to each room or space in the house. Rapoport (1969) stated that the lack of differentiation in the use of domestic space is a common characteristic of vernacular architecture.

The room arrangement of the type B house was around the central hall which acted as a focal space for the whole house. In fact the central hall layout could be considered as a development of the central courtyard house (Fethi, Rifai, 1993), in which the courtyard was covered maybe for climatic reasons.

Figure 6.24 indicates that the average mean for observations among group B was between neutral (3) and agree (4), thus it could be concluded that the room arrangement among type B houses was better than that among type A. However, some users still found it not very convenient for use. It might be because the central hall was acting as a

large lobby connecting all rooms together. This arrangement, depending on the size of the hall, could have produced difficulty in using and furnishing of the central space, and eventually room arrangement was considered by most of the users to be not so convenient.

Among type C houses, Figure 6.23 shows that within the group most users were inclined to consider the room arrangement of their houses convenient. Figure 6.24 suggests that the average mean of observations for the group is above 4 which means that most users agreed that the room arrangements of their houses are convenient in use. This could be because rooms of these houses were arranged by architects, thus they were designed in a way to eliminate waste spaces. It could also be that architects have connected different spaces/ activities of the house in a convenient way. Therefore it could be concluded that room arrangements in new houses were considered by users more convenient than those of the two other types A and B.

So it could be inferred that convenience in room arrangements of new houses was due to the influence of the architect. Consequently, architects could have contributed to the improvement of room arrangements of new houses compared to old ones and this could be an indication of the architect's contribution to change in house design in Palestine.

As a result house layout was transformed accordingly, following the arrangement of rooms around the open courtyard of type A to almost the same arrangement of rooms around a central hall of type B, and finally to a more planned layout according to functions arrangements proposed by architects, manifested among type C houses.

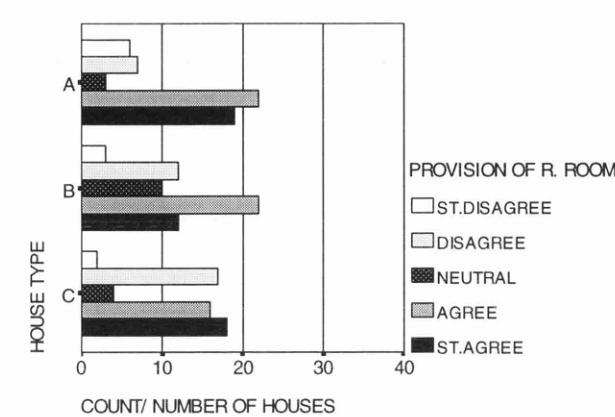
IV. Provision of a reception room

The reception room was chosen for investigation because of issues raised within the literature review of Palestinian house. It was recognised that special care was always given to provide a reception room in the house; however, size, decoration and furniture of reception rooms were determined according to family status and wealth (Rogers, 1989).

From data collected for the purpose of this study it was indicated that reception rooms were frequently recurrent among the sample houses investigated. 84.2% of type A

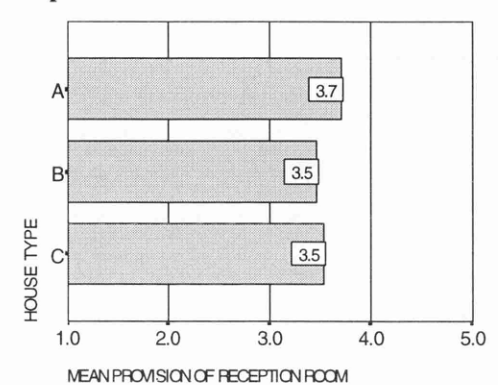
houses, 98.3% of type B houses, and 98.2% of type C houses had one or more reception rooms (for more information please refer to chapter 5).

Figure 6.26: The variation within groups of user attitudes towards the provision of a reception room in their houses.



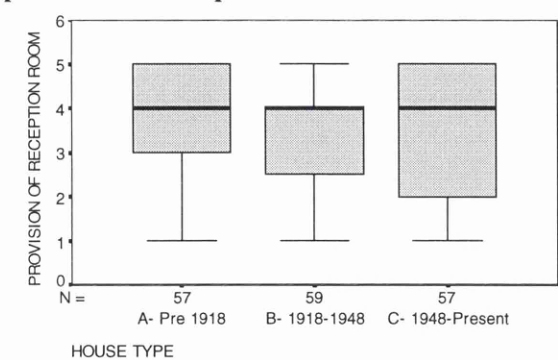
Statement: I think that the provision of a reception room in my house is a priority.

Figure 6.27: The variation between groups of user attitude towards the provision of a reception room in their houses.



Users of the three house types were to determine on the likert scale of five points, to what extent they consider the provision of a reception room in their house a priority. Figure 6.26 and 6.27 show the variation of attitude within and between groups, thus as was determined earlier by the Kruskal- Wallis and the Median tests, the difference of attitude between the three groups was not significant. So the null hypothesis that no difference existed between groups' attitudes towards considering the provision of a reception room in their houses a priority was confirmed.

Figure 6.28: Boxplot of scores distribution within groups for users' attitudes towards the provision of a reception room in their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 6.28 indicates the variation of distribution within the three groups of houses, thus it reveals that the three groups have similar median values of 4, and different distribution spreads. The figure also suggests that no extreme values (outliers) existed among the three distributions and that can explain the similar results of the K- W and the Median tests.

Therefore it could be concluded that users among the three house types were inclined to have similar attitudes for considering the provision of reception rooms in their houses a priority.

V. Importance of the reception room

As found by previous analysis (6.3.2, IV), users among the three types of houses had a positive attitude towards considering provision of a reception room in their houses a priority. Although their attitude was suggested weak (not strong), it signified that concern was given to that room, thus people were reluctant to refuse the concept suggested by the statement, which implies the priority of provision of reception room. Further investigation will be carried out to see how important users think their reception rooms are and whether they think that it should be given special design consideration in terms of size, location, and orientation. Senan (1993) argued that the reception room is one of the most important elements of the Palestinian house, thus people pay special attention to furnishing and decorating their reception rooms, however, the special care given is affected by personal, economic, and social factors.

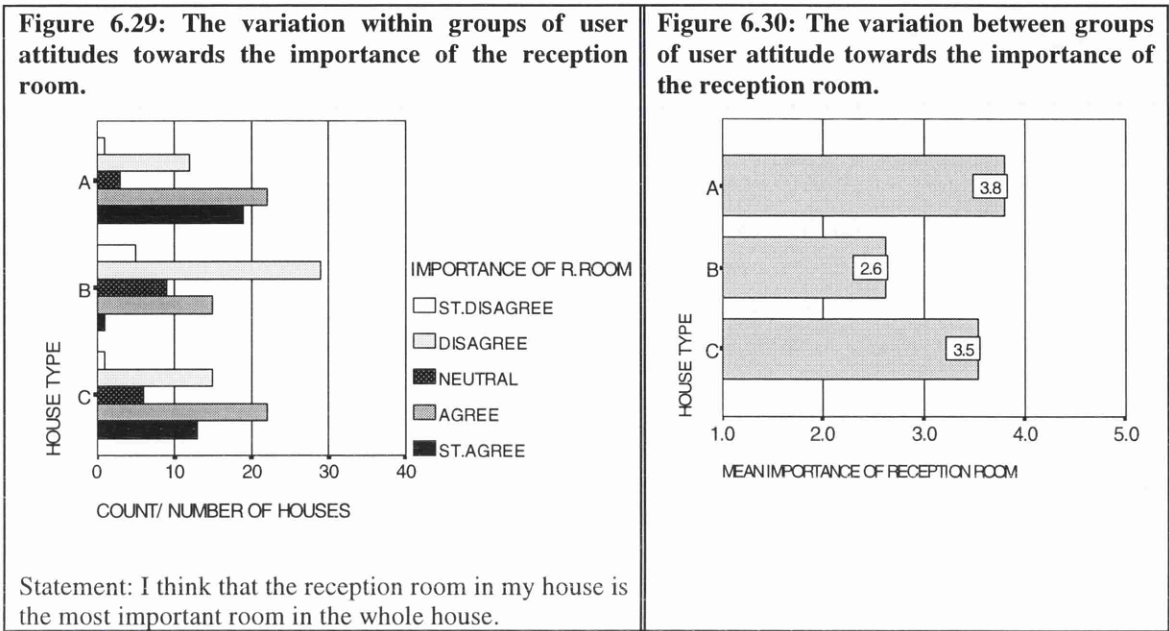
The importance of the reception room stems from hospitality which is deeply rooted within the Arab/ Palestinian culture. Lawrence (1987) defined hospitality as a territorial behaviour which is expressed by inviting someone into one’s own territory. Therefore users among the three house types were to determine the extent to which they think their reception room should be treated favourably in terms of design compared to other rooms.

Earlier results of the Kruskal- Wallis test yielded a significant difference between users’ attitude among the three groups towards the variable.

Table 6.15: Descriptive statistics for the DV importance of reception room

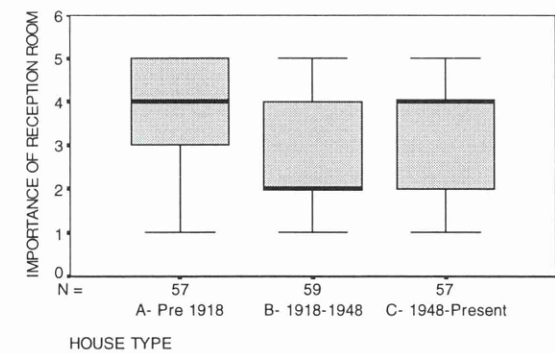
			Count	Maximum	Minimum	Mean	Median	Mode	Range
HOUSE TYPE	A- Pre 1918	IMPORTANCE OF R. ROOM	57	5	1	3.81	4	4	4
	B- 1918-1948	IMPORTANCE OF R. ROOM	59	5	1	2.63	2	2	4
	C- 1948-Present	IMPORTANCE OF R. ROOM	57	5	1	3.54	4	4	4

Figure 6.29, and 6.30 indicate the variation of user attitude within and between groups. Figure 6.29 signifies that users among type B houses comprised the highest number of people inclined to disagree with the statement.



The Median test carried out earlier implied that significant differences existed between users’ attitudes of the three groups towards the variable which could suggest that no extreme values were reported among the distributions of groups.

Figure 6.31: Boxplot of scores distribution within groups for users attitudes towards the importance of the reception room in their houses



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 6.31 shows the observations distribution among groups. It indicates that users of type A houses are inclined to adopt a more positive position towards agreement with the statement “I think that the reception room in my house is the most important room in the whole house”. The median is 4, 2, 4 among houses of type A, B, and C respectively.

From the data analysis of the two DVs concerning the reception room it could be suggested that the reception room has a significant importance among users of the three

types of houses. Users of type B houses, although reporting a negative attitude towards considering the reception room as the most important room in the house, were inclined to accept the concept that the provision of reception room in their houses is a priority (refer to 6.3.1, IV).

From the previous discussions it could be concluded that the reception room was and still is an important element of the Palestinian house, which could be due to social and cultural factors. What is of concern here is that this room preserved its functional importance and location in the layout of the house. Therefore reception rooms were and still are important to entertain visitors, show hospitality as was discussed earlier, and to display precious belongings. The location of the reception room is usually near the entrance of the house for privacy considerations.

VI. Bivariate tests of variables of PART TWO (B) of the House User Questionnaire: The House Layout

For further analysis of the results of Part Two (B), crosstabulations with the *Chi*- square (X^2) were carried out on the three house samples (A, B, C) to detect possible associations between variables. Only significant associations are listed in table 6.16.

Table 6.16 : Chi- square crosstabulation results between associated variables of part 2B of the house user questionnaire

	N	X ²	DF	P	CV
Type A houses					
Importance of the reception room by provision of a reception room	57	119.858	16	0.000	26.30
Type B houses					
Circulation by room arrangement	59	69.746	16	0.000	26.30
Importance by provision of reception room	59	63.478	16	0.000	26.30
Type C houses					
Importance by provision of reception room	57	100.721	16	0.000	26.30
Spaciousness of rooms by circulation	57	10.530	3	0.015	7.815
Arrangement of rooms by circulation	57	9.699	3	0.021	7.815

CV of X^2 . X^2 must be equal or more the stated value to be significant at p= 0.05 (Clegg, 1997: 175)

The Spearman’s and Kendall’s rank correlation tests were also carried out on associated variables to determine the level of correlation. The results are listed in table 6.17.

Table 6.17: Results of Spearman’s and Kendall’s tests for Correlation between different variables of part 2B of the house user questionnaire

IVs by DVS	Spearman's rho Test			Kendall's tau- b		P
	N	rho	AP	tau-b	AP	
Type A houses						
Provision of a reception room by importance of the reception room	57	0.629	0.000	0.540	0.000	0.05
Type B houses						
Arrangement by spaciousness of rooms	59	0.407	0.001	0.369	0.002	0.05
Type C houses						
Provision of a reception room by importance of the reception room	57	0.636	0.000	0.575	0.000	0.05
Circulation by room arrangements	57	0.408	0.002	0.388	0.002	0.05
Circulation by spaciousness of rooms	57	0.360	0.006	0.341	0.007	0.05

CV of Spearman’s rho. Rho must be equal to or more than the stated value to be significant

For N= 30, CV= 0.364 at $p \leq 0.05$ (Clegg, 1997:182)

N= 55, $r \geq 0.266$ at level $p= 0.05$, 0.345 at level $p= 0.01$ (Mark, 1996: 381)

N=60, $r \geq 0.254$ at level $p= 0.05$, 0.330 at level $p= 0.01$ (Mark, 1996: 381)

The two nonparametric correlation tests (the Spearman’s and Kendall’s) revealed the levels of association between pairs of related variables (table 6.17).

Correlation between the importance and provision of the reception room was suggested among **type A** houses (N= 57, rho=0.629, tau-b= 0.540, p=0.05), and **type C** houses (N= 57, rho=0.636, tau-b= 0.575, p=0.05). This could suggest that users among both these types believe that provision of a reception room in their houses is a priority, and are more likely to think that the reception room is the most important room in the whole house.

Data analysis of this chapter has implied that the majority of type A users attribute special importance to their reception rooms. This could be related to the traditional importance of providing special space within the Palestinian house for entertaining guests. Among type C houses, 61.4% of users suggested that reception rooms are the most important rooms in their houses, while 59.7% of the sample indicated that provision of reception rooms in their houses is a priority. Thus a large percentage of type C users attributed special importance to the reception room within the layout of the house.

Correlation among **type B** houses was indicated between arrangement and spaciousness of rooms (N= 57, rho=0.407, tau-b= 0.369, p=0.05). It could be concluded that among type B houses, those who had convenient room arrangements are more likely to have spacious rooms, or that rooms among the majority of type B houses were both spacious

and well arranged. 71.1% of type B houses were considered as having well arranged rooms, while 89.8% were implied with spacious rooms. Thus, it could be concluded that the previous correlation could be applied to the majority of houses among type B sample.

Also, correlations among **type C** houses were indicated between circulation (ease of movement between rooms), room arrangement (N= 57, $\rho=0.408$, $\tau_b=0.388$, $p=0.05$), and spaciousness of rooms (N= 57, $\rho=0.360$, $\tau_b=0.341$, $p=0.05$). These correlations could lead to the conclusion that houses among type C which have convenient circulation are more likely to have spacious well arranged rooms. Early analysis of data in this chapter suggested that the whole sample (100%) indicated convenient circulation of their houses, 85.9% implied good room arrangement, while 82.4% accommodated spacious rooms. Thus the previous correlation could be generalised to the whole sample.

VII. Summary of PART TWO (B): The Layout of the House

Investigation of different variables of Part 2(B) revealed some issues related to change in house layout from type A, the traditional Palestinian courtyard house built as part of the dense urban fabric of the old city of Nablus, into type B house, the colonial house which is detached, with the central courtyard transformed into a covered hall, and finally a into type C house, which was developed by professional architects.

However results of Part Two, which assessed users' attitudes towards the layout of the three house types among the sample, revealed that improvement occurred in the layout of the Palestinian houses, starting with type A to type B and finally ending with type C. Therefore development was identified by the circulation of the house, spaciousness, and arrangement of its rooms. This advancement could lead to some conclusions linked to the architect's role in transformation of house design.

- **Circulation**; accordingly architects introduced changes in house layout which could have reduced problems associated with circulation inside the house by the use of corridors and lobbies instead of open courtyards or central halls (covered courtyards). Therefore, this could have reduced the waste of space resulting from the use of central halls or the difficulty arising from using the open courtyard due to climatic reasons.

- **Spaciousness of rooms**; it was also obvious from the results that spaciousness of rooms was increased in houses of type C, which could also point to the architect's role in change, developing the size of rooms, enhancement of natural lighting, material, and colour that accentuate the feeling of spaciousness of interior spaces in houses.
- **Room arrangement** was also improved among new houses of type C and this could further be accredited to the architect who could have applied better functional relationships into new houses that resulted in more convenience.

To summarise, improvements in the house layout were experienced in new houses designed by architects. However, among the variables tested, house circulation was proven to be the most decisive factor that changed dramatically from type A to type B and finally to type C.

It was also evident that the reception room has preserved its importance as an essential function of house layout in the Palestinian house.

6.4. CONCLUSIONS

The results of the user attitude towards the image and the layout of his/ her house revealed that occupants of the three house types have a similar attitude towards the following :

- Caring about the external and the internal image of their houses and therefore about what people and visitors think of their houses. However, more differences in attitudes were revealed between users towards the external image of the house, while more caring attitudes were reported towards the internal image compared to the external image of the house.
- The importance of family identification via house design and the need to have a distinguished living environment.
- The provision of a reception room in their houses: a large number of users among the three house types believed that the provision of a reception room in their houses is a priority, while fewer users believed that the reception room should be the most important room in the whole house. This exceptional importance attached to the reception room was evident in traditional houses and was kept in modern houses.

Furthermore, the results of Part Two of the house user questionnaire unveiled that users among the three house types reported different attitudes towards the following:

- Identification of users by their houses: identity association with the living environment was felt the least among users of type A houses, while users among type C were the most aware of being identified by their houses. Type B users fall in a mid position between the two types of A and C houses.
- Convenience of the circulation system within the layout: users among type A houses reported the lowest levels of convenience in house circulation, while, users amongst type C houses reported high levels of convenience in their houses' circulation.
- Spaciousness of rooms: type A houses were associated with the least spacious rooms, on the other hand rooms of type C houses were evaluated as spacious enough for use.
- The arrangement of rooms among the three house types which yielded improvement among type C houses compared to the two other types. Type A houses reported the lowest levels of appropriateness in use in terms of room arrangements.
- Considering the reception room as the most important room in the house. Different attitudes of users were reported among the three groups concerning the variable. Nevertheless, the result indicated special importance for the reception room in the Palestinian house.

The outcome of data analysis of Part Two (A+B) could shed some light on issues related to:

- 1- The Palestinian house design transformation
- 2- The users' contribution to the transformation of house design
- 3- The architects' contribution to the transformation of house design

1- The Palestinian house design transformation

The results of data analysis of the user attitude towards the layout of his/ her house revealed that transformation has occurred in the Palestinian house design. The courtyard house was transformed to the central hall house as a result of covering the courtyard for climatic reasons. Later the modern house was introduced by architects who started to follow the international trends in house architecture. Therefore, the findings of Part two unveiled that transformation of house design was through the following:

- An improvement in house circulation, which was identified by its historical and architectural development occurring from type A to type B and finally to type C houses. Thus the circulation, via the open courtyard in the traditional houses of type A, and via the central hall of the colonial houses of type B, has developed to a more functional circulation via corridors and lobbies in the modern houses of type C.
- An enhancement of room disposition identified following the development from type A houses to type B to type C. Therefore room arrangements around open courtyards among type A houses, and around a central halls among type B houses, changed to a more planned room arrangement among type C houses.
- An increased feeling of room spaciousness among users manifested in the change of house design from type A houses to B and C.
- A change in house orientation from an inward looking design to an outward looking one. This could be due to a change in attitude towards privacy from neighbours and passers-by.
- The introduction of the “garden” as an outdoor space that can be used for sitting and as a children’s play area.

2- The users' contribution to change

By analysing the data of Part Two it could be argued that users had their say in provoking change in house design in Palestine. For instance there is an obvious inclination, among users, for a preference for the new house (this will be further investigated in chapter nine). Needless to say, users had a very positive attitude towards new houses in contrast to the old ones. This was confirmed by attitudes to circulation inside the house, spaciousness and arrangement of rooms, as well as self- esteem identity.

Evaluated by their users, type C houses appear to be more convenient for use than old houses of both type B and A although type B houses, were deemed by the user, to be more satisfactory than type A. Ultimately, this was revealed by the user's over-all satisfaction, highest in type C houses and lowest in type A houses.

Obviously if users believed that new houses are preferable to old ones and that they are more convenient and functional they could have contributed in accelerating the change in house design in Palestine.

The change in users' lifestyle and their attitude towards privacy must have been matched by a similar change in the design/ layout of their houses.

3- The architect's contribution to change

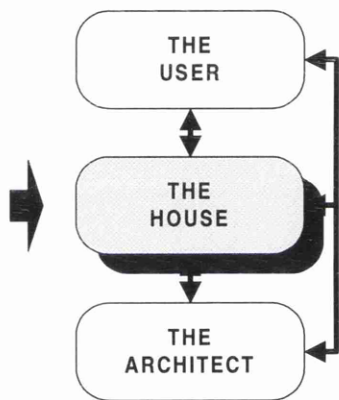
The architect's impact on the change of house design could be either active or passive. Thus, the active role of the architect could be through his work and designs, hence by the introduction of new ideas and design concepts to housing, whereas his passive influence could be through the dissemination of his ideas concerning the built environment through the display of his/ her built work. This could generate an impact on people's preference for a certain architectural style. As many practising architects teach at the local schools of architecture, e.g. Al-Najah university, their thoughts on traditional architecture will influence the new generations of graduates.

Therefore development in house design manifested among houses of type C could be accredited, inter alia, to the architect, thus the architect could have played a vital role in transforming the layout of the Palestinian house. No doubt the architect contributed in improving the house layout by solving problems associated with old houses, but on the other hand he could have participated in the abandonment of traditional concepts of house design.

6.5. REFERENCES

- ALEXANDER, C. (1964): *Notes on the Synthesis of Form*, Harvard University Press, Cambridge, MA.
- ALLPORT, G. W.(1967): Attitudes, in M. Fishbein (ed.), *Attitudes Theory and Measurement*, John Wiley and Sons, New York, pp.8.
- ALTMAN, I&GAUVAIN, M.(1981): A Cross- Cultural and Dialectic Analysis of Homes. In L. Liban and N. Newcombe (eds.) *Spatial Representation and Behavior Across the Life Span*. Academic Press, New York.
- AMIRY,S., TAMARY,V.(1989): *The Palestinian Village House*, The British Museum, London.
- BENSWESSI, A.H.(1987): *A Study on the Concept of Identity Towards an Architecture as a Harmonious Identifiable Fabric*, Unpublished Ph.D. Thesis, University of Pennsylvania.
- CASWELL, F. (1995): *Success in Statistics*, third edition, John Murray publishers, London, pp.136-147.
- CLARK, R.H., PAUSE, M.(1985): *Precedent in architecture*, Van Nostrand Reinhold Company Inc. New York, pp.5.
- CLEGG, F. (1997): *Simple Statistics, A course Book for the Social Sciences*, Cambridge University press, United Kingdom, Unit 8, 12, 15.
- CONNOLLY, T.G. & SLUCKIN, W.(1971): *An Introduction to Statistics for the Social Sciences*, third edition, the Macmillan Press LTD, London.
- COOPER, C.(1974): " The house as a symbol of the self", in LANG et al. (eds.), *Designing for Human Behaviour: Architecture and Behavioural Science*, pp. 130-46, Dowden, Hutchinson and Ross, Stroudsburg, PA.
- DAWES, R.M. (1972): *Fundamentals of Attitude Measurement*, John Wiley & Sons, INC., New York.
- DUNCAN, J. ed.(1981): *Housing and Identity: Cross- Cultural Perspectives*, Croom Helm, London.
- EGELIUS, M.(1980): Housing and Human Needs: the work of Ralph Erskine, in Mikellides (ed.), *Architecture for People*, pp.135-148, Macmillan Publishing co., New York.
- FETHI,I. ,RIFAI,T.(1993): *Traditional Houses in Amman: A Topological Study of the Architecture of Early Houses of Amman*, Jordan, Symposium on the conservation of Architectural Heritage in Jordan and the Arab World 20-25 Nov., The University of Jordan and the Aga Khan trust for culture, Amman ,Jordan.
- FRUDE, N.(1993): *A Guide to SPSS/PC+* Second edition, The Macmillan Press Ltd., London.
- GEORGE, D.& MALLERY, P.(1995): *SPSS/PC+ Step by step: a simple guide and reference*, Wadsworth Publishing Company, Belmont. Ch. 6, 8,11,30
- JIN,J.H. (1993): Home as Expression of Identity, in BULOS, M. & TEYMUR,N .(eds.) *Housing: Design, Research, Education*, Ashgate Publishing Limited, England, pp.181-192.
- KOSTOF, S.(1992): *The city assembled*, Thames and Hudson, London, p.198.
- LAWRENCE, R. J.(1987): *Housing, Dwellings and Homes: Design theory, research and practice*, John Wiley & sons, Chichester, New York, Toronto, Ch.4.
- MACRAE, S.(1994): *Drawing Inferences from statistical Data*, The British Psychological Society, UK, Ch. 2,7.

- MARK, R. (1996): *Research Made Simple: A Handbook for Social Workers*, SAGE Publications, Thousand Oaks, London, New Delhi, pp.381.
- NACHMIAS, D.& NACHMIAS, C. (1976): *Research Methods in the Social Sciences*, Edward Arnold, London, pp. 109-117, 286-295.
- NORUSIS, M. J.(1986): *The SPSS Guide to Data Analysis*, SPSS Inc., USA.
- QAMHIEH, K.(1992): *Saving the Old Town of Nablus, A Conservation Study*, Unpublished Ph.D. Thesis, Mackintosh school of architecture, University of Glasgow,UK.
- RAPOPORT, A. (1969): *House Form and Culture*, Foundation of cultural geography Series. Prentice- Hall Inc., Englewood cliffs, N.J.
- RAPOPORT, A.(1981): Identity and Environment : a Cross- Cultural Perspective, in (ed.) Duncan J.S., *Housing and Identity, Cross Cultural Perspectives*, Croom Helm Ltd, London, pp. 6-35.
- ROBINSON,F. (1982): *An Atlas of the Islamic World Since 1500*, Phadon, Oxford, England, pp.218.
- ROGERS, M.E.(1989): *Domestic Life in Palestine*, Kegan Paul International, London, New York, pp.262.
- SENAN, Z.(1993): *The House as an Expression of Identity: The case of the Palestinian House*, Forum, Volume 2, CARDO, University of Newcastle Upon Tyne, UK, pp.3-10.
- SENAN, Z. (1993): *Political Impacts on the Built Environment: Colonisation and the development of place identity. The case study of rural west Bank (Palestine)*, Unpublished Ph.D. Thesis, Newcastle upon Tyne, UK.
- SPSS Base 7.0 Application Guide (1996), SPSS Inc.
- WEISS, N.A. (1995): *Introductory Statistics*, Fourth edition, Addison - Wesley Publishing Company, Inc., New York, England, Paris.



7. Chapter Seven

Bivariate analysis of House Condition (Environmental, Social and Psychological, and Functional):
(Exploring Relationships)

The Analysis of Part Three of the House User Questionnaire

7.1. INTRODUCTION

This chapter reports on the findings of house condition. It presents the data analysis and discussion of Part Three of the house user questionnaire, which attempt to examine the sample houses in terms of environmental and functional conditions, as well as other social and psychological requirements of the house.

Chapter seven (along with chapter five and chapter eight) will establish grounds for evaluating the three house samples. Chapter five presents general information, chapter seven investigates the house condition, and chapter eight will deal with issues pertinent to the design process of the house. This will bring about a comprehensive comparison and assessment of the three house types (A, B, and C). Type A represents the traditional Palestinian house, while type B symbolises the colonial house, and type C denotes the modern house.

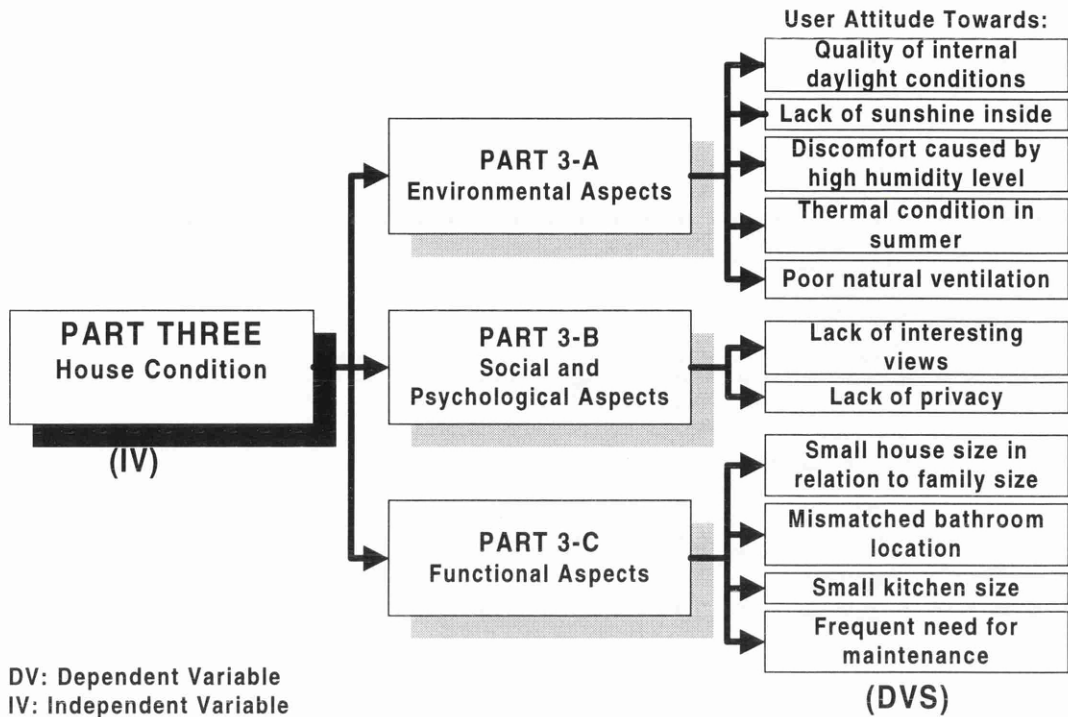
PART THREE (A) of the house user questionnaire examines the environmental condition inside the house. It investigates some issues/ problems related to quality of internal day lighting conditions, lack of sunshine indoors, humidity levels, thermal comfort conditions of the house during summer, and poor natural ventilation.

PART THREE (B) investigates one of the important psychological aspects of the house, which is the house outlook or its orientation towards interesting views. It also explores issues related to privacy in relation to next door neighbours.

PART THREE (C) examines some functional aspects of the house, therefore it investigates some issues/ problems related to the house size in relation to family size, the location of the bathroom, kitchen size and the frequent need for maintenance. Figure 7.1 gives a graphical representation of this chapter's contents.

The findings of this chapter will enable an evaluation of general aspects of house condition that characterise each of the three types of houses. A comparison between the three types may shed some light on the contribution of architects (proposition 2), and users (proposition 1) to transformation of house design in Palestine.

Figure 7.1: Diagram of the structure of chapter seven showing its three parts and different variables.



7.2. PART THREE OF THE HOUSE USER QUESTIONNAIRE

The main objective of this part is to identify problems related to some aspects of the house condition and to investigate the architect's role in how type C house is addressing these problems. A comparison between the condition of type C houses, designed by architects, and the conditions of the other two types of houses, which were designed by master builders and users, might shed some light on the extent to which the architect has contributed to change in design of the Palestinian house.

Therefore to conduct comparisons between results and to determine if the three groups come from the same population or not (i.e. have the same mean), the *Chi*-square test as well as two nonparametric tests for *k* independent sample were employed; the Kruskal-Wallis test for one-way ANOVA and the Median test. The three tests are carried out on each DV, then the result will determine if there is a significant difference between the three groups, and if the null hypothesis, which assumes that no differences exist between groups, is to be accepted or refuted. (for more information about the Kruskal-Wallis test and the Median test refer to *chapter six*, 6.2.2).

For the measurement of each variable the Likert scale of five levels is used (5= strongly agree, 4= agree, 3= neutral, 2= disagree, 1= strongly disagree), then graphical representations of bar and boxplot diagrams indicate the distribution of observations within groups and compare results between the three groups.

The data analysis of this chapter will include: the *Chi*- square test, the K- W and the Median tests, as well as Spearman and Kendall rank correlation tests which will be carried out to examine levels of correlation between associated variables.

7.2.1. PART THREE (A) : Environmental Conditions

This part investigates some of the environmental conditions of the three types of sample houses. Five variables were identified, namely quality of internal day lighting conditions, lack of sunshine inside, discomfort caused by high humidity levels, thermal condition in summer, and poor natural ventilation.

One of the architect's tasks is to deal with the problem of orientation of the building. This problem is composed of many factors, one of which is climatic (Olgyay, 1973: 53). Investigation of this part will reveal whether or not climatic factors were considered by the architect in the design of type C houses.

The Kruskal- Wallis and the Median tests have been chosen to compare observations among the three groups of houses. Hence test results will determine if the three types of houses differ significantly in terms of their environmental conditions or not, and whether the null hypothesis which assumes that no differences exist between the three groups of houses is to be confirmed or refuted. The house type is considered as one independent variable (IV) next to which other dependent variables (DVs) are to be tested.

Table 7.1 summarises the results of the Kruskal -Wallis test carried out on the three groups of houses (A, B, C) by the five DVs. The mean rank of each group is listed in the table with *Chi*- square test results for the five variables (DV1= 8.693, DV2= 17.572, DV3= 12.587, DV4= 0.393, DV5= 19.347). The values of *Chi* -square for DV1, DV2, DV3, and DV5 exceeded the critical value of 5.991 at $p= 0.05$ (Weiss, 1995). The three

groups proved to vary significantly with these variables, accordingly the null hypothesis is refuted for DV1, DV2, DV3, and DV5.

Table 7.1: The result of the Kruskal Wallis test of the five DVs of part 3A of the house user questionnaire in relation to IV (the house type)

DVs	Cases N	Type A MR	Type B MR	Type C MR	Chi square	df	p	CV X^2
1- Quality of internal daylight	173	98.78	88.90	73.25	8.693	2	0.013	5.991
2- Lack of sunshine inside	173	107.67	81.47	72.05	17.572	2	0.000	5.991
3- High humidity levels	173	102.54	87.60	70.84	12.587	2	0.002	5.991
4- Thermal condition in summer	173	84.93	86.04	90.06	0.393	2	0.822	5.991
5- Poor natural ventilation	173	103.92	90.20	66.76	19.347	2	0.000	5.991

MR= Mean rank

CV= The tabulated critical value from the standard table of X^2 , df= Degree of freedom.

Chi- square (X^2) must be equal or more than the stated value of CV to be significant.

For the variable DV4, *Chi- square* did not exceed the critical value of 5.991 under $p=0.05$ thus, the three groups did not vary significantly with the variable and the null hypothesis is confirmed in this case for DV4.

As a result, it can be concluded that the environmental conditions of the three types of houses differed significantly in terms of quality of internal day lighting conditions, lack of sunshine inside, discomfort caused by high humidity levels, and poor natural ventilation. On the other hand the K- W test suggested that there was no significant difference in the thermal conditions of the three groups of houses in summer.

The Median test was also carried out on the five variables of part three (A) to compare the number of values among each group that fall above and under the grand median (the median of all groups). Table 7.2 summarises the *Chi- square* results of the five variables (DV1= 5.809, DV2= 17.832, DV3= 11.486, DV4= 1.062, DV5= 11.874). The value of *Chi- square* for DV2, DV3, DV5 exceeded the critical value of 5.991 under $p=0.05$ (Clegg, 1997: 175), therefore the median of the three groups proved to vary significantly with these variables, thus the null hypothesis which assumes that no differences existed between groups is refuted for DV2, DV3, and DV5.

Table 7.2: The results of the Median test of the five DVs of part 3A of the house user questionnaire in relation to IV (the house type)

DVs	N	Median	Type A	Type B	Type C	Chi- square	df	p	CV X ²
1 Quality of internal daylight	173	> <= Median = 2	32 25	31 28	20 37	5.809	2	0.055	5.991
2 lack of sunshine inside	173	> <= Median = 2	32 25	18 41	11 46	17.832	2	0.000	5.991
3 High humidity levels	173	> <= Median = 2	35 22	28 31	17 40	11.486	2	0.003	5.991
4 Thermal condition in summer	173	> <= Median = 2	15 42	19 40	20 37	1.062	2	0.588	5.991
5 Poor natural ventilation	173	> <= Median = 2	26 31	20 39	9 48	11.874	2	0.003	5.991

CV= The tabulated critical value from the standard table of X², df= Degree of freedom.
Chi- square (X²) must be equal or more than the stated value of CV to be significant.

On the other hand, the result showed that *Chi- square* did not exceed the critical value of 5.991 under p=0.05 for DV1 (which was very close), and DV4, therefore the null hypothesis is confirmed for these two variables.

To conclude, both of the K-W and the Median tests yielded similar results for all variables except for DV1 (quantity of natural light). The three groups proved to vary significantly with DV1 according to the K-W test (*Chi- square* = 8.693), while the difference between groups for the variable was insignificant according to the Median test (*Chi- square* = 5.809). However the value of *Chi- square* was too close to the critical value of 5.991 under p= 0.05 (Clegg, 1997), which indicates that differences can exist between groups in terms of the variable.

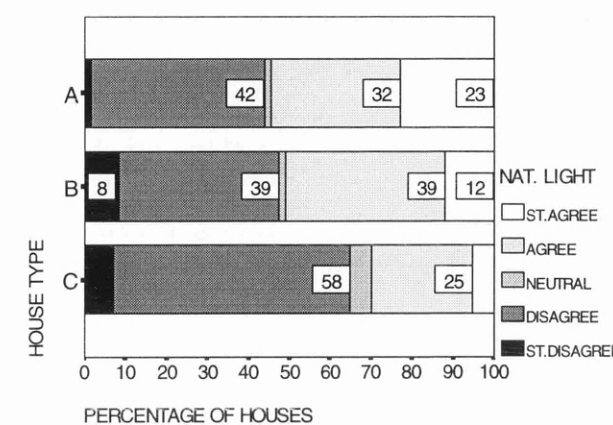
More detailed investigation of the three groups results will be carried out to compare within and between group variability among the three house types.

I. Quality of internal day lighting conditions

This variable investigates the sufficiency of natural daylight inside the sample houses. The Kruskal- Wallis test carried out earlier on the DV next to the house type yielded

significant differences between groups regarding the variable ($X^2= 8.693$, $df=2$, $CV= 5.991$), and it was concluded that the three house types differed in the quality of day lighting conditions inside.

Figure 7.2: Percentage of observations' distribution for the DV quality of internal daylight.



Statement: Natural light in my house is insufficient.

Figure 7.3: Means of group observations for the DV quality of internal daylight.

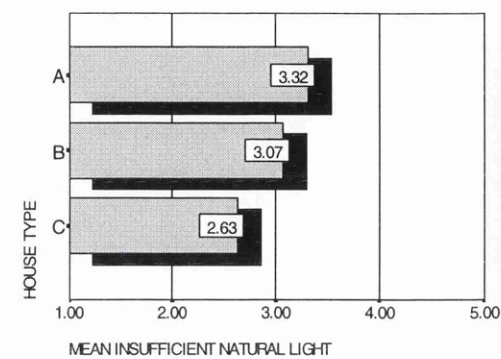
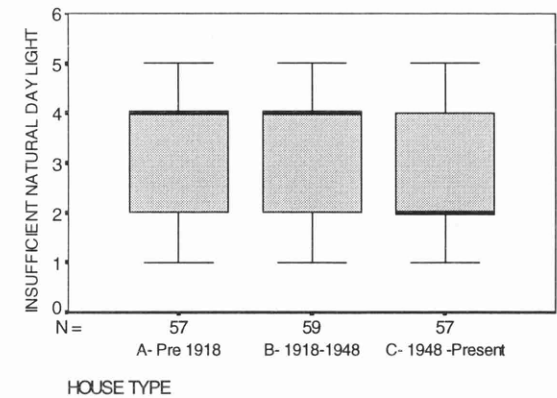


Figure 7.3 shows that some variations exist between groups; the mean of observations among type A houses is 3.32, while it is 3.07 among type B houses and 2.63 among type C houses. This could suggest that type A houses receive the least amount of natural light and that type C houses receive more natural light than the other two types, while type B houses fall between type A and C.

On the other hand, the Median test carried out on the variable yielded insignificant differences between groups, although the *Chi*- square value of 5.809 was too close to the critical value of 5.991 under $p=0.05$ (Clegg, 1997: 175).

Figure 7.4 compares the median and the observations' distribution within the three samples' houses. It indicates that the median among type A and B samples has the value of 4; (agree) on the Likert scale while it is 2 among group C (disagree), however the observation spread is similar among the three groups, also 50% of the cases among the three groups fall between 2 and 4. Thus the figure signifies that the quality of internal daylight conditions among type C houses is better compared to the other two types.

Figure 7.4: Boxplot of score distribution within groups for the DV quality of internal daylight



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

In fact figure 7.3 indicates that type A houses reported the highest score for mean of observations which can signify that these houses receive the least amount of natural day light, and that a large percentage among type B houses do not receive sufficient natural light (mean score 3.07) compared to type C houses (mean score 2.63), which were said to receive more natural light than the other two types (see *chapter 2* for plans and elevations)

The less natural daylight inside type A houses could be due to the small size of openings used among this type of house in comparison to larger openings used in type B and C houses. The restricted size of windows of traditional houses was accompanied by the use of shading devices to eliminate solar radiation and glare, which resulted in reduction of light in the interiors (Danby, 1984:89).

Despite larger openings in type B houses, the quantity of light was regarded as insufficient among 51% of these dwellings; this could be due to inadequate planning of window position or size. On the other hand, a larger percentage of type C houses were held to receive sufficient day light. Therefore it could be concluded that both window size and position were adequately planned (Figure 7.2).

It could also be suggested that as type A houses were located inside the high density old city of Nablus while the other two types of B and C houses were situated outside, type B and C houses have a better chance to receive more natural light than type A. Furthermore, the inward looking scheme adopted amongst type A houses controlled the light received by inner spaces of the house, therefore natural daylight was indirectly received. The courtyard, however, acts as a light well which provides lighting for spaces around (Petherbridge, 1978: 199). In contrast, the outward looking houses of type B and C guaranteed sufficient, directly received natural daylight.

It can be implied from figure 7.3 that the amount of light received in type C houses was more than that received in type B, although both of them have the same opportunity of receiving sun due to the same extroverted design layout adopted in both schemes. Thus it could be inferred here that the architect’s involvement in the design of the new houses of type C affected the results. The architect could have paid enough consideration to the design of the fenestration system by planning opening sizes relative to the sizes of the interior spaces of these houses, thus this might have increased the amount of daylight admitted into these houses.

II. Lack of sunshine inside

This variable is concerned with the orientation of the house so it receives sun for at least four hours during the day in winter. The architect aims to position a building in order to obtain the best sun value for thermal effect, hygiene, and psychological benefits (Olgyay, 1973: 53).

The *Chi*- square test was carried out to examine the null hypothesis which assumes that no differences exist between the three groups of houses in terms of their direct sun reception. The test yielded that significant differences do exist between groups, *Chi*-square value exceeded the critical value at level $p= 0.05$ ($X^2= 22.247$, $df=8$, $CV= 15.51$ under $p=0.05$). Table 7.3 lists the results.

Table 7.3: Chi- square test of the DV lack of sun reception by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by the lack of sun reception	173	22.247	8	0.004	15.51

CV= the critical value of X^2 at level $p= 0.05$, X^2 must be equal to or more than the stated value to be significant (Clegg, 1997:175).

As a result of the *Chi*- square test the null hypothesis is refuted and it was concluded that the three groups of houses differ significantly in terms of the amount of sun received. In addition, both the Kruskal Wallis and the Median tests carried out earlier on the DV lack of sun reception next to the house type yielded significant differences between groups regarding the variable, which means that houses among the three types do not have an equal chance of receiving sun.

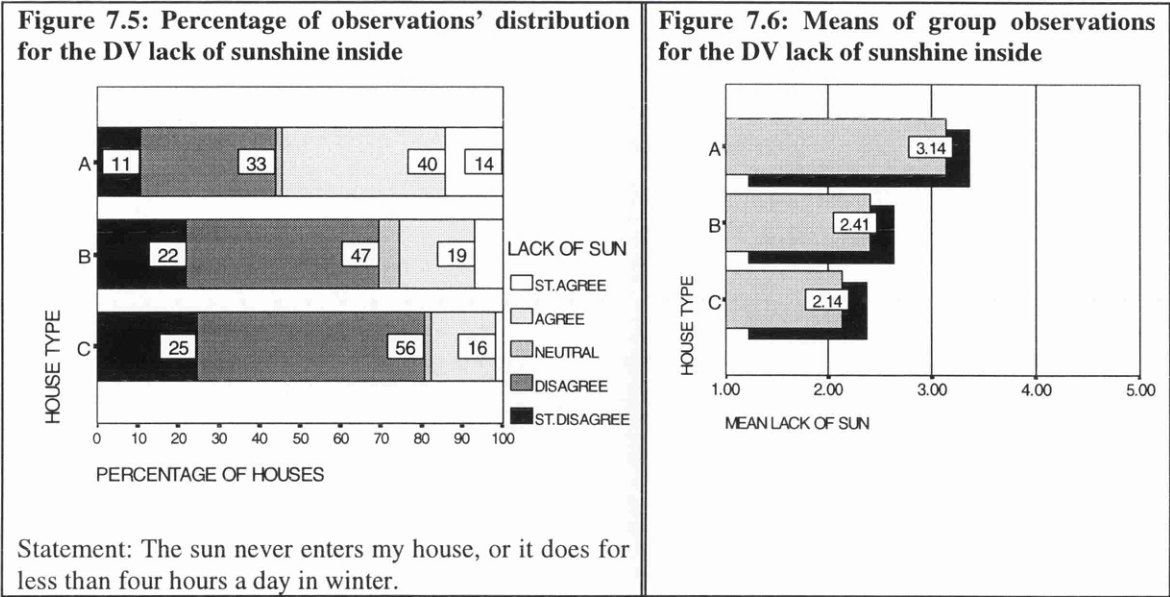
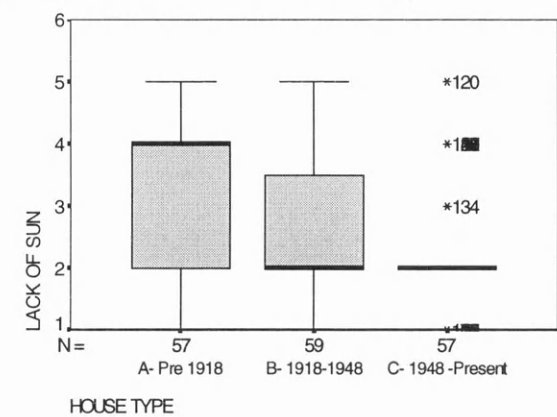


Figure 7.5 indicates the percentage of observations within each group, while figure 7.6 suggests that the means of groups observations, thus it compares variability between groups. Therefore it can be stated that type A houses receive the least amount of sun, with more than half of the sample houses reporting that they were not receiving enough sun (figure 7.5). However, among type B and C houses, the mean observations were 2.41, and 2.14 respectively, therefore it could be implied that most of these houses receive a sufficient amount of sun.

Figure 7.7 indicates that type A houses reported the least amount of sun received, the median is 4 (agree) and 50% of the cases fall between 2 and 4, while type B houses are in a better position, the median is 2 and 50% of the cases fall between 2 and 3.5. Type C houses are in the best position; most cases, except a few outliers, receive sun.

As was mentioned before, type A houses are situated inside the crowded old city of Nablus whose planning is both compact and of high density. This form of planning, could have reduced the amount of sun these houses receive. They are courtyard houses designed according to an introverted principle which guarantees indirect sun penetration (Dunham, 1960: 666). Alternatively, houses of type B, and C are of dispersed form and were located outside the old city with a better chance to receive sun as their extroverted concept of design allows for more direct sun reception.

Figure 7.7: Boxplot of score distribution within groups for the DV lack of sun reception.



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Difference in the amount of sunshine inside the three house types, could also be due to different window sizes used in each house type as discussed earlier (7.2.I.) Small windows used among type A houses allow for less penetration than those of the other two types which are relatively larger.

By comparing the mean results of type B and C houses (Figure 7.6), it was concluded that type C houses have a better sun reception than that of type B houses.

It could be inferred that since type C houses were designed by architects, they must have had an influence on the house’s layout in terms of room orientation and openings size and position.

III. Discomfort caused by high humidity levels

This variable investigates humidity levels and the problems associated with it in the sample houses. Therefore, to test the null hypothesis, which assumes that no differences exist between the three groups of houses in terms of the extent of discomfort experienced due to high humidity levels, the *Chi- square* test was conducted. The result showed that significant differences do exist between groups, *Chi- square* exceeded the critical value at level $p= 0.05$ ($X^2= 17.862$, $df=8$, $CV= 15.51$ under $p=0.05$). Table 7.4 lists the result.

Table 7.4: Chi- square test for the DV high humidity levels by the IV house type

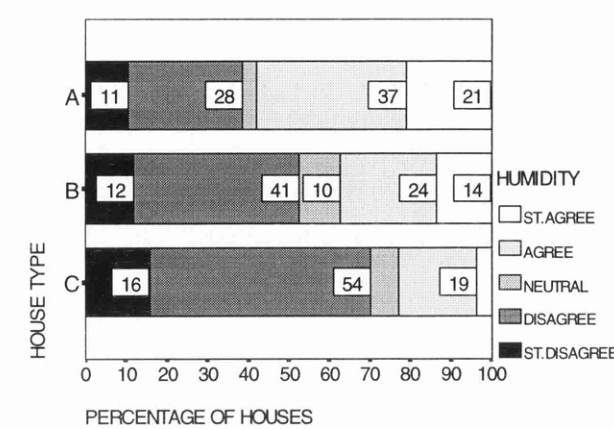
IV by DV	N	X ²	df	P	CV
The house type by high humidity levels	173	17.862	8	0.022	15.51

CV= the critical value of X^2 at level $p= 0.05$, X^2 must be equal to or more than the stated value to be significant (Clegg, 1997:175).

Accordingly the null hypothesis is refuted. Thus it could be concluded that the three types of houses have different conditions in terms of humidity levels and the resultant problems to occupants’ comfort. Moreover, the Kruskal Wallis and the Median tests

carried out earlier have indicated that there were significant differences between groups regarding the DV .

Figure 7.8: Percentage of observations’ distribution for the DV high humidity levels



Statement: My house is uncomfortable because of high humidity levels.

Figure 7.9: Means of group observations for the DV high humidity levels

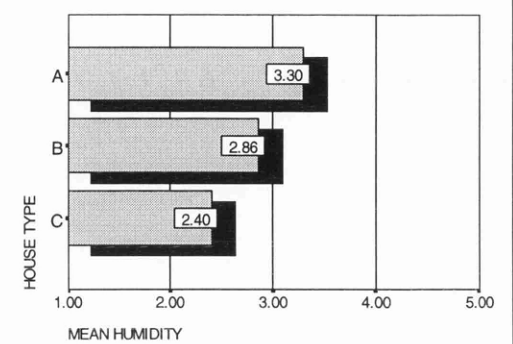
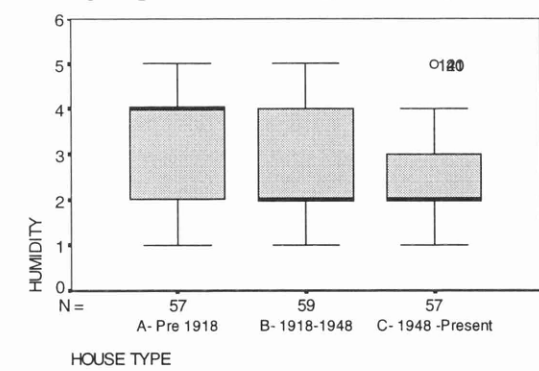


Figure 7.8 suggests the percentage of observations within each group of houses, while figure 7.9 indicates the means of observations between the three groups regarding the variable which investigates humidity problems. This could suggest that type A houses suffer more of discomfort due to humidity problems than the other two types, with type C houses being the least affected among the sample.

Figure 7.10: Boxplot of score distribution within groups for the DV high humidity levels.



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 7.10 indicates that among type A houses the median is 4 (agree) while it is 2 (disagree) among houses of type B and C. The observation spreads among type A and B groups are between 1 and 5 with 50% of the cases falling between 2 and 4, while the spread is between 1 and 4 among type C houses and 50% of the cases fall between 2 and 3. This implies that more humidity problems were reported among older houses of type A and B than type C houses.

However when comparing the results of the three types of houses, type A is suggested to suffer more than the other two types from humidity problems. It could be argued that type A houses, which form part of the dense urban structure of the old city of Nablus, do not receive sufficient sun as was discussed earlier, nor do they have good ventilation, thus humidity levels among these houses tend to be high, consequently causing discomfort.

The lack of comfort due to high levels of humidity were also detected among type B houses on a narrower scale if compared to type A houses, while new houses of type C were the least affected by discomfort due to high levels of humidity. So it could be concluded that old houses in general suffer more humidity problems especially those houses located inside the old city of Nablus. This could be due to dampness caused by water retention in walls and lack of proper maintenance

It could be inferred that architects must have contributed to the improvement of the environmental conditions of house type C, where humidity problems were considerably reduced. Furthermore, the development of building constructions techniques had led to the introduction of damp proof membranes which reduced the problem in new buildings.

IV. Thermal condition in summer

This variable is intended to investigate the thermal comfort conditions of the sample houses during summer. The null hypothesis of no differences between groups of houses in terms of the variable was examined by conducting the *Chi*- square test. The result yielded insignificant differences between the three types of houses, *Chi*- square did not exceed the critical value of 15.51 at level $p=0.05$ ($X^2= 8.487$, $df=8$, $CV= 15.51$ under $p=0.05$) (table 7.5).

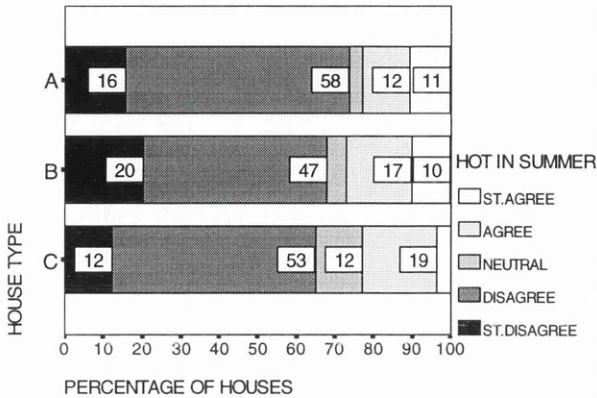
Table 7.5: Chi- square test of the DV thermal condition in summer by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by thermal condition in summer	173	8.487	8	0.387	15.51

CV= the critical value of X^2 at $p= 0.05$, X^2 must be \geq the stated value to be significant (Clegg, 1997:175).

Thus, as a result the null hypothesis is confirmed. Therefore it was concluded that the three groups of houses have similar thermal conditions during summer. Also both the Kruskal- Wallis and the Median tests carried out earlier suggested that there was no significant difference between the three groups regarding the variable.

Figure 7.11: Percentage of observations' distribution for the DV thermal condition in summer



Statement: My house is too hot during summer.

Figure 7.12: Means of group observations for the DV thermal condition in summer

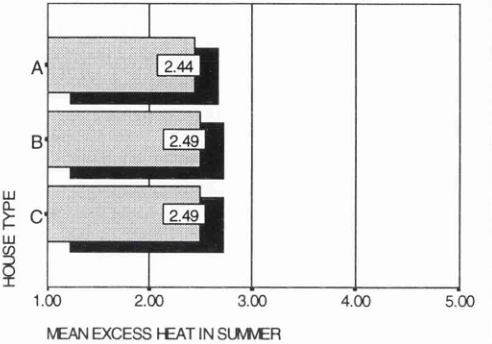
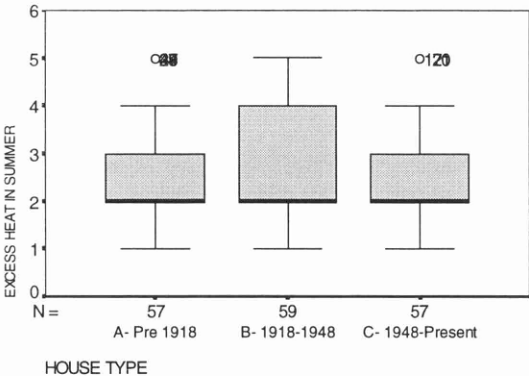


Figure 7.11 indicates the close percentages of observations within each of the three groups of houses, while from figure 7.12 it is obvious that the means of observations reported were similar. Therefore it was concluded that users of the three types of houses are not inclined to consider their houses too hot during summer.

Figure 7.13: Boxplot of score distribution within groups for the DV thermal condition in summer



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 7.13 indicates that the median among the three groups has a similar value of 2 (disagree). The spread among type A and C house groups is similar; between 1 and 4, with outlier scores. 50% of the cases among type A and C fall between 2 and 3. Therefore this result suggests similar summer thermal conditions among type A and C houses.

On the other hand, type B house observations have a spread between 5 and 1 with 50% of the cases falling between 2 and 4. This could imply that both type A and C houses are in a slightly better situation than house type B. It could be that although both type B and C houses are built according to an extroverted design scheme, type B house was developed by the user, who had insufficient technical knowledge to consider orientation of the house as an important design issue. House orientation could have been better considered by the architect in the layout of type C house.

The mean scores (figure 7.12) also suggest that type A houses have slightly better summer thermal conditions than the other two types, although it was expected that the difference might be substantial, because the traditional courtyard house is accredited special characteristics of acting as a thermal regulator (Danby, 1973), (Petherbridge, 1978), (Dunham, 1960). Therefore, it might be that the sample houses considered in this study, which were mostly small, did not experience the effect of courtyards to create comfortable micro climatic conditions. This was due to the fact that the majority of large houses of the old city of Nablus were divided into smaller residential units. However, change in house size in the old city of Nablus will be discussed later in this chapter.

Also it might be that the moderate climate of Palestine diminished the difference in the micro climatic conditions of old and new houses. By all means this point needs further investigation which is beyond the scope of this study.

V. Poor natural ventilation

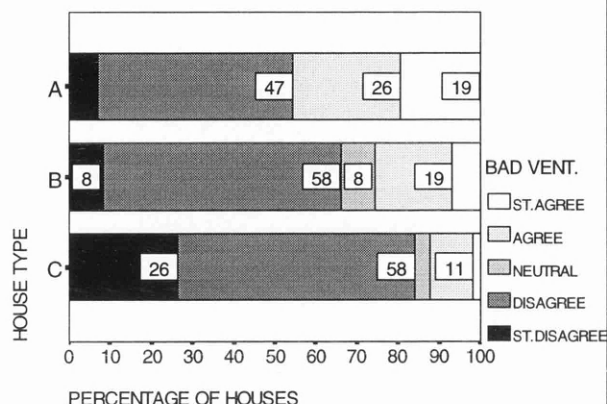
Houses were examined in terms of the efficiency of their natural ventilation system. To investigate the variability between groups, and to test the null hypothesis which assumes that no differences exist between the three groups of houses in terms of the this variable, the *Chi*- square test was carried out. It yielded significant difference between groups in terms of this variable (ventilation), as the *Chi*- square value exceeded the critical value under $p = 0.05$ ($X^2 = 29.415$, $df = 8$, $CV = 15.51$ under $p = 0.05$) (table 7.6). As a result, the null hypothesis is refuted, and it could be concluded that the three types of houses differed in terms of the efficiency of their ventilation system. Also the Kruskal- Wallis and the Median tests carried out earlier suggest that significant differences exist between the three groups of houses regarding the DV.

Table 7.6: Chi- square test of the DV poor natural venntilation by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by poor natural ventilation	173	29.415	8	0.000	15.51

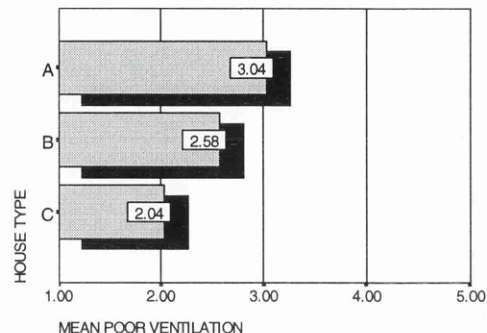
The critical value of X² at level p= 0.05, X² must be equal to or more than the stated value to be significant (Clegg, 1997:175).

Figure 7.14: Percentage of observations' distribution for the DV poor natural ventilation.



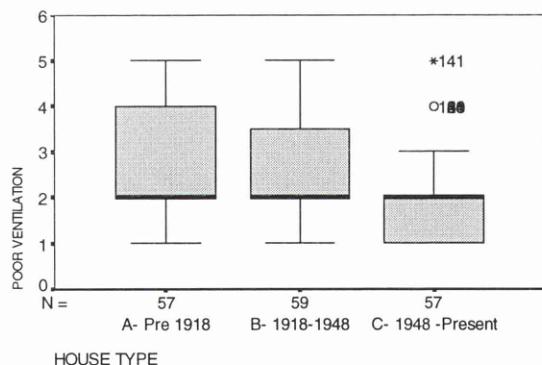
Statement: My house suffers from poor natural ventilation

Figure 7.15: Means of group observations for the DV poor natural ventilation.



It is obvious that type C houses have a better natural ventilation system than the other two types A, and B. Type A houses reported the highest mean score (3.04), which implies that these houses have the poorest natural ventilation among the three groups.

Figure 7.16: Boxplot of score distribution within groups for the DV poor natural ventilation.



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 7.16 also indicates the same result that type A houses have the poorest natural ventilation compared to the other two types; the median score is 2 (disagree) and 50% of the cases fall between 2 and 4. Type B reported better ventilation than type A houses, while among type C only a few cases reported bad natural ventilation. The results can be explained by looking at the planning of type A houses.

Situated inside the dense urban fabric of the old city of Nablus, they have attached compact forms, which make the planning of adequate natural ventilation difficult

compared to the other two types of houses situated outside the old city as detached buildings. Therefore the introverted layouts of type A houses which allow for ventilation mainly through enclosed courtyards could have contributed to less efficient natural ventilation. On the contrary type B and C houses proved to have better ventilation as their extroverted layout and large windows allow for air movement via cross-ventilation.

However when comparing houses of type B to C, it was concluded that although both house types are detached, built according to an extroverted scheme, type C proved to have better ventilation. Therefore it could be suggested that ventilation of sample houses was improved from type A to B to C. This development could be accredited to the architects as they designed type C houses. Orientation of the house and the consideration of wind movement could have been reasons behind the improved ventilation of type C houses

7.2.2. PART THREE (B) : Social and Psychological Aspects

This part of the house user questionnaire evaluates the house in terms of two aspects:

- The orientation of the house towards interesting views
- Privacy of the house in relation to its surroundings (i.e. from next door neighbours and passers-by)

The Kruskal -Wallis test was carried out on the two variables in relation to the house type. The results are presented in table 7.7.

Table 7.7: The results of the Kruskal- Wallis test of the two DVs of part 3B of the house user questionnaire in relation to IV (the house type)

DVs		Cases N	Type A MR	Type B MR	Type C MR	Chi- square	df	p	CV X ²
1-	Lack of interesting views	173	108.44	77.75	75.14	17.382	2	0.000	5.991
2-	Lack of privacy	173	96.42	82.83	81.89	3.390	2	0.184	5.991

CV= The tabulated critical value from the standard table of X² . df= Degree of freedom

Table 7.7 summarises the results of the Kruskal- Wallis test carried out on the three groups of houses by the two DVs. The table lists the mean ranks for each group next to the two DVs, and the results of the Chi- square test (DV1= 17.382, DV2= 3.390). The Chi- square value for DV1 exceeded the critical value of 5.991 under p= 0.05 (Weiss, 1995), while it did not exceed it for DV2, consequently the three groups differed

significantly with DV1 but not with DV2. Therefore the null hypothesis is rejected for DV1 and accepted for DV2.

The Median test was also carried out on the two variables next to the house type. Table 7.8 summarises the results; it shows the number of values above and under the grand median. Thus the *Chi*- square results are: DV1=17.406, DV2= 1.678. The value of DV1 exceeded the critical value of 5.991 under $p= 0.05$ (Clegg, 1997: 175), therefore the three groups proved to vary significantly with this variable. In contrast, the value of DV2 did not exceed the critical value, thus the three groups prove not to vary significantly with that variable.

Table 7.8: The results of the Median test of the two DVs of part 3B of the house user questionnaire in relation to IV (the house type)

DV's			Median	Type	Type	Type	Chi-	df	p	CV
N				A	B	C	square			X ²
1	Lack of interesting views	173	>	35	17	16	17.406	2	0.000	5.991
			<=	22	42	41				
			Median = 2							
2	Lack of privacy	173	>	27	21	23	1.678	2	0.432	5.991
			<=	30	38	34				
			Median = 2							

CV= The tabulated critical value from the standard table of X². df= Degree of freedom (Clegg, 199:175)

Hence, the null hypothesis was refuted for the first variable and confirmed for the second. Therefore it was concluded as a result of both the K- W and the Median tests that orientation of the three types of houses towards interesting views were significantly different, while the privacy of houses in relation to their surroundings among three types of houses was similar.

I. Lack of interesting views

This variable investigates the outlook of the house, i.e. orientation towards interesting views, which could be the mountains, greenery, or simply the possibility to enjoy uninterrupted views. The *Chi*- square test, which examines the null hypothesis that no differences exist between the three groups of houses in terms of their orientation towards pleasing views, yielded that significant differences exist between the three groups, *Chi*- square exceeded the critical value of 15.51 under $p= 0.05$ ($X^2= 21.297$, $df=8$, $CV= 15.51$ under $p=0.05$). Table 7.9 lists the results.

Table 7.9: Chi- square test of the DV lack of interesting views by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by lack of interesting views	173	21.297	8	0.006	15.51

CV of X² at level p= 0.05, X² must be ≥ the stated value of CV to be significant (Clegg, 1997:175).

Accordingly the null hypothesis is refuted, therefore it could be concluded that the three types of houses have different conditions in terms of their orientation towards interesting views. Results of the Kruskal- Wallis and the Median tests also suggested that there was a significant difference between the groups regarding the variable, so it could be concluded that houses of the three types have different opportunities of overlooking interesting views.

The two figures 7.17, 7.18 imply that type A houses have the largest number of respondents lacking interesting views, while the other two types B, and C reported very close results of mean scores. This suggests that more houses of types B and C have more interesting views of the city than those of type A.

Figure 7.17: Percentage of observations' distribution for the DV lack of interesting views

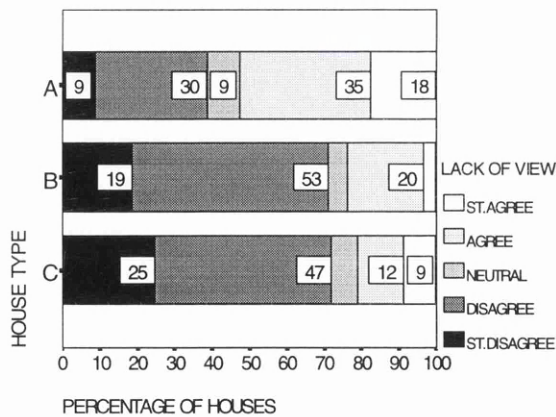
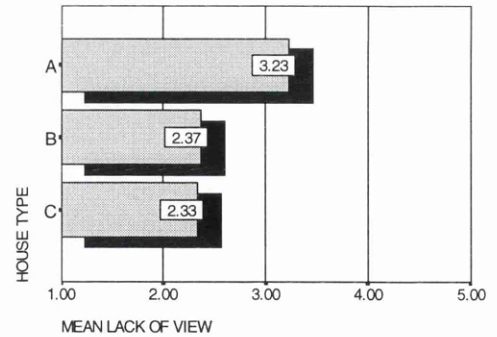


Figure 7.18: Means of group observations for the DV lack of interesting views

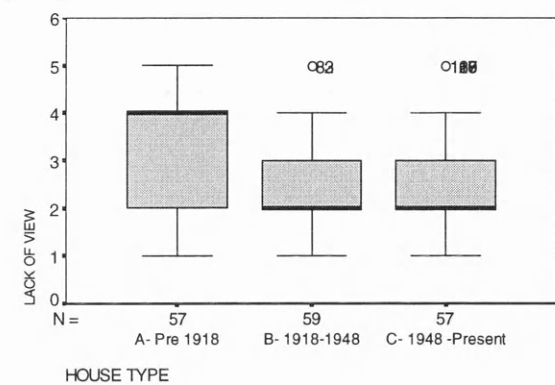


Statement: My house lacks interesting views

Figure 7.19 indicates that the spread of observations among type A houses is between 1 and 5, however 50% of the cases fall between 2 (disagree) and 4 (agree), and the median is 4. On the other hand, both type B and C observations spread between 1 and 4, while 50% of their cases fall between 2 and 3 (neutral), and the median is 2. This can confirm the previous results that fewer houses among type A were oriented

towards good views. This lack of good views could be because of the nature of type A layout which is inward oriented towards enclosed courtyards.

Figure 7.19: Boxplot of score distribution within groups for the DV lack of views



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

It could also be that the topography of the city of Nablus has influenced the result because type B and C houses are located on the slopes of the city’s two mountains which gave houses of the two types a good opportunity of overlooking views. The old city, however, is situated in the valley which exists between the two mountains. Its urban fabric is a dense cellular structure composed of inward looking buildings.

Although architects could have improved the outlook of houses of type C, their influence is irrelevant to be considered here because the two types of houses B and C reported almost the same mean score (Figure 7.18). Consequently the good response indicated among type C houses may or may not be accredited to architect intervention in these designs.

II. Lack of privacy

This variable investigates whether the sample houses have enough privacy in relation to next-door neighbours and passers-by. To test the null hypothesis, that no differences in privacy exist between groups, the *Chi- square* test was carried out, and yielded insignificant differences between the three groups, as the *Chi- square* in table 7.10 did not exceed the critical value of 15.51 at level $p=0.05$ ($X^2= 11.842$, $df=8$, $CV= 15.51$ under $p= 0.05$).

The other two types, B and C houses, were built according to an extroverted principle, thus they were open to views of the surroundings.
In addition, type A houses are located inside the old city of Nablus, while type B and C were situated outside the old city, therefore their position could have given them the chance of better orientation and the opportunity of more openness to views.

Table 7.10: Chi- square test of the DV lack of privacy by the IV house type

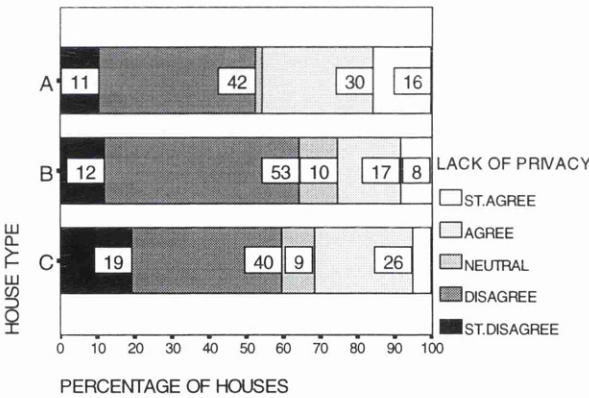
IV by DV	N	X ²	df	P	CV
The house type by lack of privacy	173	11.842	8	0.158	15.51

CV of X², p= 0.05, X² must be equal to or more than the stated value to be significant (Clegg, 1997:175).

As a result the null hypothesis is confirmed. Therefore it was concluded that the three types of houses under investigation proved to have similar levels of privacy. Also both the Kruskal- Wallis and the Median tests suggested that the differences between groups regarding the variable are not significant. Thus it was concluded that the level of privacy from next-door neighbours and passers-by do not vary between the three types of houses.

Layouts of the three types of houses differ in their relation to the surroundings. While type A houses were built adjacent to the street, with almost blank facades and small screened window openings facing the outside, type B and C were built according to the extroverted principle of design with large openings to the outside.

Figure 7.20: Percentage of observations’ distribution for the DV lack of privacy.



Statement: My house does not provide enough privacy from next-door neighbours and passers-by.

Figure 7.21: Means of group observations for the DV lack of privacy.

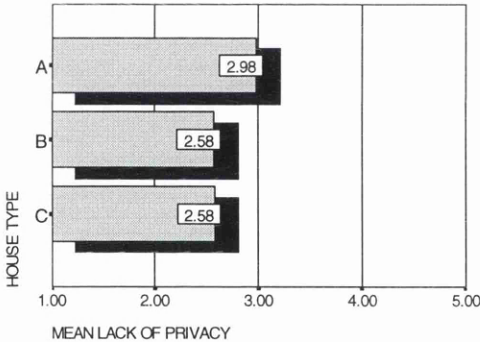
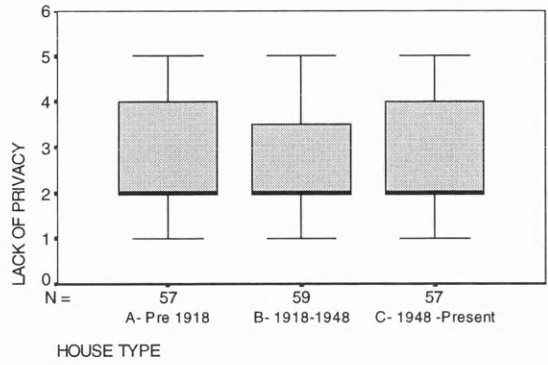


Figure 7.20 and 7.21 imply that the three types of houses have close results regarding the variable. However type A observations’ mean is 2.98, while type B and C report the same score of 2.58, which could signify that users of type A houses feel less private than users of the other two types of houses.

Figure 7.22 : Boxplot of score distribution within groups for the DV lack of privacy.



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree.

Figure 7.22 indicates that observations among the three samples have the same spread, between 1 and 5 and same median i.e.2. 50% of observations among type A and C houses fall between 1 and 4, while 50% of observations fall between 3.5 and 2 among houses of type B. This could suggest that type B houses may be slightly more private than the other two types

Traditional houses, however reported a higher score for the mean of observations (2.98) compared to the other two types, which could imply less privacy among type A houses relative to their next- door neighbours and passers-by.

On the other hand, the traditional introverted courtyard house has given special consideration to the privacy of its residents. This issue was addressed by Petherbridge (1978: 197-198), Hakim (1986), Rogers (1982), Robenson (1982: 219). For more details refer to chapter two.

The lack of privacy suggested by a large percentage of type A houses might be due to alterations to their original layout to adjust for the change in family size. The extended family which used to live in one large house considered privacy as a collective issue for all family members, i.e. no privacy between family members. Today the traditional extended family is substituted by small nuclear families. Consequently large houses have been divided into smaller residential units to accommodate several nuclear families not closely related or unknown to each others. These families consider privacy individually, and this could have influenced the level of privacy of these houses which were originally built to ensure ultimate privacy for their users.

A survey carried out by Yousof (1996) revealed that the degree of privacy among residents sharing the same house in the old city of Nablus was reported to be less when the dwelling is occupied by households not related to each other (Yousof, 1996: 273). Therefore it is possible that the trend of sharing the house with unrelated families can

affect the level of privacy between occupants of type A houses who are considered as next-door neighbours within one large house.

Type B houses reported a slightly higher level of privacy compared to the other two types according to figures 7.20 and 7.22 Privacy was lowest among type A houses, with type C houses falling in between. This could be explained as people in the past were more conscious of privacy, but as a result of social changes which occurred during the twentieth century, people have become less worried about privacy. Also the social and psychological perspective of the concept of privacy has changed.

Traditional houses of type A were originally built with maximum privacy considerations, but when type B houses were constructed with an extroverted layout which opens to the outside, privacy was less of an issue to its occupants. The modern house of type C was built after the other two types with less privacy consideration as it ceased to become a major issue.

Since type A houses have experienced a great many changes in terms of size, occupancy, an design, as explained before, the level of privacy among these houses has been badly affected. On the contrary, type B houses did not experience these same changes, so their level of privacy was not affected. Therefore this might be the reason for type B to report the higher level of privacy among the three groups and for type A to report the lowest.

7.2.3. PART THREE (C) : Functional Aspects

Part three (C) examines some functional aspects of the house with four variables identified: small house size, mismatched bathroom location, small kitchen size, and the frequent need for maintenance. Hence, to test the variability between the three groups of houses the Kruskal- Wallis and the Median tests were carried out on house typology by the four DVs. The results of both tests are listed in table 7.11, and 7.12.

Table 7.11 summarises output by the Kruskal- Wallis test. It shows the mean rank of each group representing a house type next to the four DVs. The *Chi*- square test results are listed for the four variables (DV1= 24.139, DV2= 38.853, DV3= 42.141, DV4=

53.416). All values of *Chi*- square exceeded the critical value of 5.991 under $p= 0.05$ (Clegg, 1995: 175). Therefore the three groups vary significantly with all four DVs and the null hypothesis is refuted for all DVs investigated in this test.

Table 7.11: Results of the Kruskal- Wallis test of the four variables of part 3C of the house user questionnaire next to IV (The house type)

DVs	Cases N	Type A MR	Type B MR	Type C MR	<i>Chi</i> square	df	p	CV X^2
1- Small house size	173	106.47	91.27	63.11	24.139	2	0.000	5.991
2- Mismatched bathroom location	173	109.22	96.36	55.10	38.853	2	0.000	5.991
3- Small kitchen size	173	112.50	93.82	54.44	42.141	2	0.000	5.991
4- Frequent need of maintenance	173	114.24	96.03	50.41	53.416	2	0.000	5.991

CV= The tabulated critical value from the standard table of X^2 , df= Degree of freedom

It could be concluded that the three groups of houses suffer to different extents from problems related to functional aspects represented by the four DVs.

The Median test was also carried out on the four DVs, the result is listed in table 7.12.

7.12: The results of the Median test of the four DVs of part 3C of the house user questionnaire in relation to IV (the house type)

DVs	N	Median	Type A	Type B	Type C	Chi- square	df	p	CV X^2
1 Small house size	173	> <= Median = 2	31 26	24 35	10 47	16.861	2	0.00 0	5.991
2 Mismatched bathroom location		> <= Median = 3	41 16	32 27	9 48	37.707	2	0.00 0	5.991
3 Small kitchen size	173	> <= Median = 3	41 16	29 30	9 48	36.641	2	0.00	5.991
4 Frequent need for maintenance	173	> <= Median = 3	42 15	34 25	9 48	40.807	2	0.00 0	5.991

CV= The tabulated critical value from the standard table of X^2 . df= Degree of freedom (Clegg, 199:175)

Table 7.12 indicates the number of values above and under the grand median, and lists the *Chi*-square results for the four variables; DV1= 16.861, DV2= 37.707, DV3= 36.641, DV4= 40.807. The value of the *Chi*- square for all four variables exceeded the critical value of 5.991 at $p\leq 0.05$, therefore the null hypothesis is refuted for the four variables.

To conclude, the Median test result supported the result of the Kruskal -Wallis test, as both showed significant differences between the three groups of houses in terms of problems related to different functional aspects of the house.

I. Small house size in relation to family size

The total floor area of the house is investigated in relation to the family size. The *Chi*-square test was carried out (table 7.13) and suggested significant differences between the three house types, *Chi*-square exceeded the critical value at $p \leq 0.05$ ($X^2 = 29.796$, $df = 8$, $CV = 15.51$ under $p = 0.05$).

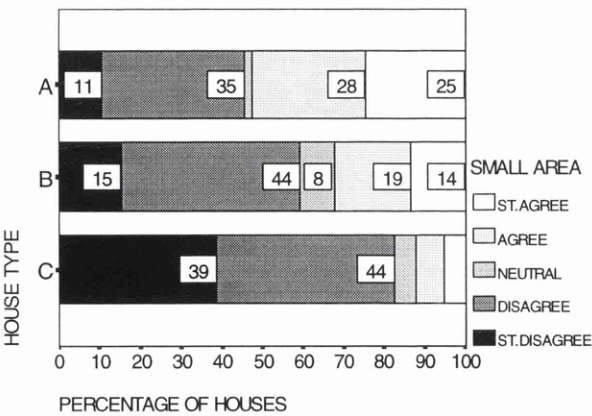
Table 7.13: Chi- square test of the Dv small house size by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by small house size	173	29.796	8	0.000	15.51

The critical value of X^2 at level $p = 0.05$, X^2 must be equal to or more than the stated value to be significant (Clegg, 1997:175).

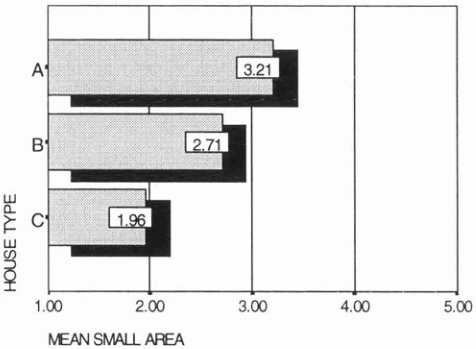
As a result the null hypothesis of no differences between the three groups is refuted. Also both the Kruskal- Wallis and the Median tests confirmed that significant differences exist between groups regarding the variable. Accordingly, it was concluded that the three types of houses under investigation proved to have different situations in terms of match between house and family size.

Figure 7.23: Percentage of observations’ distribution for the DV small house size in relation to family size



Statement: The total area of my house is small in relation to the size of my family.

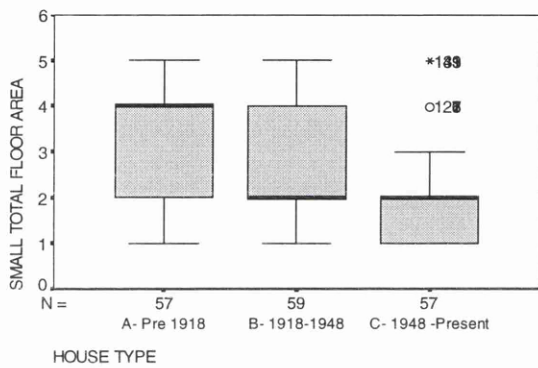
Figure 7.24: Means of group observations for the DV small house size in relation to family size



From figures 7.23 and 7.24 it is obvious that type A houses have the largest mean score, which can imply that more houses among type A sample have inadequate areas compared to their family size.

Figure 7.25 shows that among type C houses the spread of observations is narrower than the other two types, which indicates a very low level of problems due to small house size. 50% of the cases fall between 1 (strongly disagree) and 2(disagree). Therefore it was revealed by the results that type A houses suffer more than the other two types from

Figure 7.25 : Boxplot of score distribution within groups for the DV small house size



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

inappropriateness of their house size compared to family size. Type B houses reported a lower mean score than type A (figure 7.24), which could suggest that they comprise fewer houses of small size that mismatch their family size. On the other hand the observation mean of type C (1.96) can imply that the house size was suitable to the family size among most of the sample.

Moreover, this result could be supported by further analysis carried out earlier in chapter five (5.2.1,V-a) when general information of the house user questionnaire was discussed. Total floor area of the house was examined in relation to family size, thus among type C houses, the total floor area of houses indicated an increase concurrently with the increase in family size. On the other hand it was suggested among type A and B houses that the total floor area of the house did not respond to the change in family size.

The size of type A houses was the smallest among the three samples investigated, as it was revealed that the highest number of persons per household was among type A sample. A possible explanation might be that over-crowding was high inside the old city of Nablus, which is one characteristic of old cities in the West- Bank (Maqbool, 1987: 121). Traditional houses of type A are present in the old city of Nablus .

The size of traditional houses of type A in Nablus was discussed by Qamheih (1992). He argued that the change in house size was due to social changes which reduced the size of the traditional family. Therefore large traditional houses which were built to accommodate three generations of the extended family were divided into small residential units to adapt to the size of nuclear families (Qamheih, 1992:131).

Type B, which represent the colonial house, reported better results compared to type A houses, thus most of the houses among type B were suggested of suitable size compared to the size of their families. The best results were found among type C houses as very few houses reported mismatched house size.

Therefore, the size of the house which is suitable to the size of the family indicated among type C of modern houses could be accredited to the architect who could have considered the size of the family and designed the house accordingly.

II. Mismatched bathroom location

This variable was chosen for investigation as a result of personal observations during visits to old houses and discussions with people about the problems of such dwellings. To test the null hypothesis that no differences exist between the three house types in terms of mismatch of their bathroom locations, the *Chi*- square test was carried out, and the results showed significant differences between the three groups (table 7.14), *Chi*-square exceeded the critical value of 15.51 at level $p= 0.05$ ($X^2=48.430$, $df= 8$, $CV= 15.51$ under $p=0.05$).

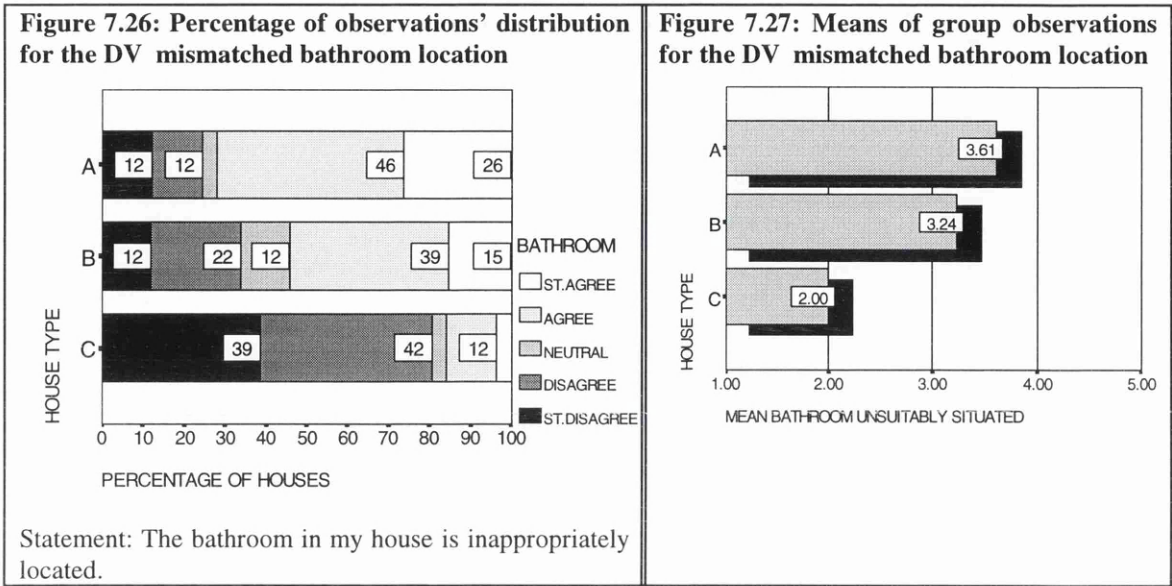
Table 7.14: Chi- square test of the DV mismatched bathroom location by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by mismatched bathroom location	173	48.430	8	0.000	15.51

The critical value of X^2 at level $p= 0.05$, X^2 must be $\geq CV$ to be significant (Clegg, 1997:175).

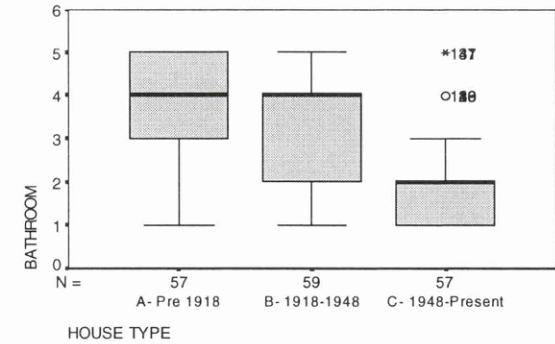
The Kruskal- Wallis and the Median tests also suggested significant differences between groups regarding the variable, therefore the null hypothesis is refuted. It was concluded that the appropriateness of bathroom locations among the three types of houses were different.

Figure 7.26 suggests an inclination among users of type A and B houses to agree with the inappropriateness of the bathroom location in their houses, while the trend is reversed among users of type C houses. Figure 7.27 shows that type A and B houses comprise larger numbers of dwellings with mismatched bathrooms.



Thus it could be concluded that the problem of bathroom location exists among old houses of type A and B, while among houses of type C the problem exists on a very narrow scale.

Figure 7.28: Boxplot of score distribution within groups for the DV mismatched bathroom location



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Figure 7.28 shows that among group A houses 50% of the cases fall above 3 (neutral) with the median score of 4 (agree) which indicates that a large number of houses have mismatched location of bathroom. Type B group has a median score of 4 with 50% of the cases falling between 2 (disagree) and 4 (agree) which can imply fewer mismatched bathrooms than that found among type A.

On the other hand among type C houses, most cases reported appropriate bathroom locations; the median is 2 (disagree) while 50% of the cases fall between 2 and 1.

Traditionally, among type A houses toilets were located outside the house and were approached via the open courtyard. However bathrooms as a place for washing hardly existed as people used the public baths (Hammams). The situation started to change by the beginning of the 19th century, as bathrooms became an essential utility among old houses (Yousof, 1996: 280). It was suggested by this survey that 96.5% of type A houses have their own private bathrooms (refer to *Chapter 5* for more details), but most of these bathrooms must have been added to the original house later. This could be the reason why it was indicated by most houses that the bathroom mismatched location.

Among type B houses bathrooms existed originally within the house, but maybe the location was not planned carefully and that is why it was suggested by almost 50% of the sample users as inappropriately situated. However among type C houses the majority of users (more than 80%) disagreed with the statement, and forced the conclusion that their bathrooms are located appropriately.

This result could suggest that an improvement has occurred in type C house planning, evident in the suitable location of bathrooms indicated by a considerable percentage of users. This development, however, could be due to the architect's intervention in designing type C houses. Thus architects could have attempted to solve problems of different functions of house layout through design.

II. Small kitchen size

The variable small kitchen size was chosen for investigation as a problem found among old houses, and was brought forward as a result of personal observations and discussions with users of old houses. The null hypothesis, that suggests no differences between groups in terms of the size of their kitchens, was tested. The *Chi*-square test was carried out and significant differences were registered between the three groups of houses. *Chi*-square exceeded the critical value of 15.51 at level $p=0.05$ ($X^2=55.898$, $df=8$, $CV=15.51$ under $p=0.05$). Table 7.15 lists the results.

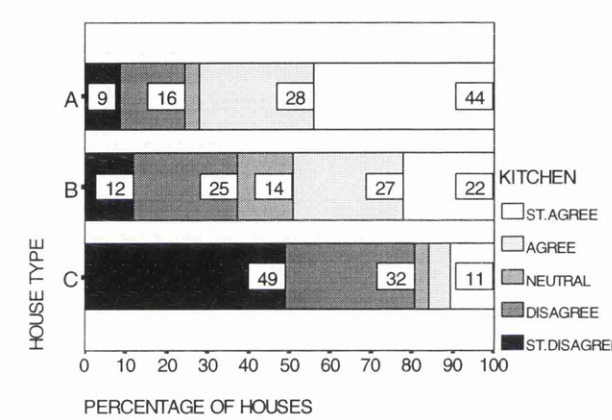
Table 7.15: Chi- square test of DV small kitchen size by the IV house type.

IV by DV	N	X ²	df	P	CV
The house type by small kitchen size	173	55.898	8	0.000	15.51

The critical value of X² at level p= 0.05, X² must be equal to or more than the stated value to be significant (Clegg, 1997:175).

As the null hypothesis is refuted, it was concluded that the three types of houses proved not to have similar problems due to small kitchen size. The Kruskal- Wallis and the Median tests also suggested significant differences between the three groups of houses regarding the variable. Thus it could be concluded that the size of kitchen changes among the three house types.

Figure 7.29: Percentage of observations’ distribution for the DV small kitchen size



Statement: The kitchen in my house is too small.

Figure 7.30: Means of group observations for the DV small kitchen size

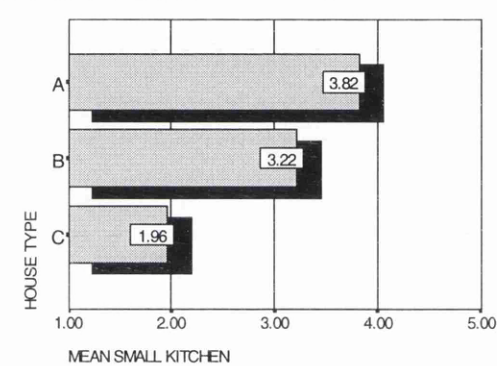
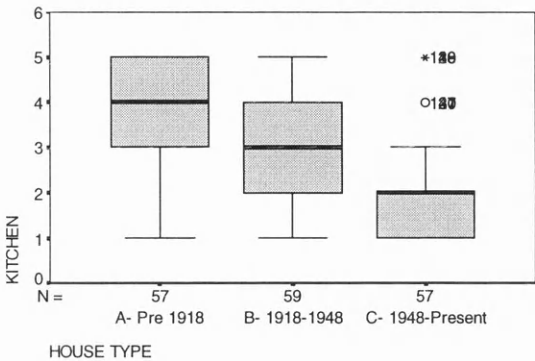


Figure 7.29 indicates within groups variability; it suggests that among type A houses more users are inclined to agree with the statement that suggest smallness of their kitchens, while fewer people among type B are inclined to agree. Alternatively, more people among type C houses disagree with the statement. Figure 7.30 shows the means of observations between the three groups. Thus it is obvious that type A and B houses have problems due to the small kitchen size while such problem was reported by few cases only among type C houses.

Figure 7.31 supports the previous results; it indicates that among type A houses more users agree that their kitchens are small, while the problem is less apparent among houses of type B.

Figure 7.31: Boxplot of score distribution within groups for the DV small kitchen size



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

On the other hand the spread of type C house observations suggest that only few cases (outliers) reported small kitchen size. Therefore it could be concluded that problems of small kitchen size are associated with older houses of type A and B, while the problem does not exist among houses of type C.

Yousof (1996: 280) argued that among type A houses the cooking space was traditionally part of the courtyard. However today most houses have their own kitchens, although he remarked that very few houses accommodated spaces that could be identified as proper kitchens. On the other hand, according to Part One of the house user questionnaire, it was suggested that among type A houses 91.3% have private kitchens (for more information, refer to *Chapter five*). Therefore it could be concluded that kitchens were added later to these houses.

Results revealed that the size of kitchen among type B houses was said to be more convenient than kitchens of type A houses. Alternatively, type C houses were reported to have even more convenient kitchen sizes. Therefore, development which occurred in kitchen size amongst type C houses could be accredited to the architect as these houses were designed by architects. So it could be inferred that architects introduced new, more functional planning for kitchens of new houses.

IV. The frequent need for maintenance

The frequent need for maintenance is investigated as a problem indicated among old houses, particularly older houses of type A located inside the old city of Nablus. Yousof (1996:293, 290) explained that the subdivision of houses into small units for the purpose of rental exacerbates the problem of maintenance especially when the owner is absent. Therefore most of the houses suffered physical damage and neglect, and thus the need

for maintenance is intensified. His survey revealed that 56.5% of the houses were rented. According to the data brought forward by this survey, 52.6% of type A sample were rented houses. (for more details refer to Chapter 5).

To examine the null hypothesis of no differences between groups in terms of their need for maintenance, the *Chi*- square test was conducted, and it demonstrated significant differences between the three groups of houses, with the *Chi*-square value exceeding the critical value of 15.51 at level $p=0.05$ ($X^2=58.421$), $df=8$, $CV= 15.51$ under $p= 0.05$). Table 7.16 lists the result.

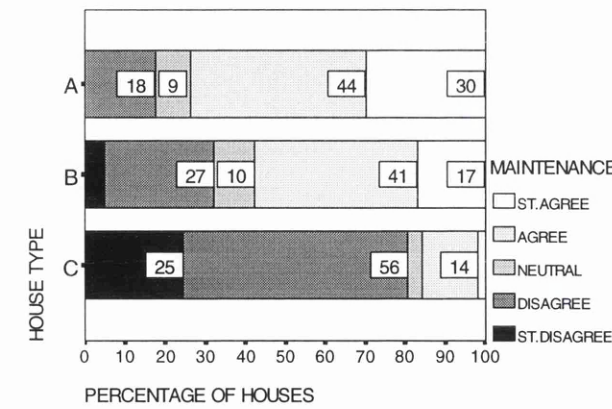
Table 7.16: Chi- square test of the DV frequent need of maintenance by the IV house type

IV by DV	N	X ²	df	P	CV
The house type by the frequent need of maintenance	173	58.421	8	0.000	15.51

CV of X^2 at $p= 0.05$, $X^2 \geq$ than the stated value to be significant (Clegg, 1997:175).

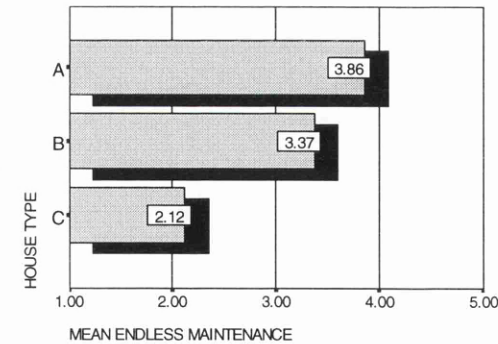
As a result of the *Chi*- square test the null hypothesis is refuted. It was concluded that the three types of houses proved to be different in their need for maintenance. Moreover, both the Kruskal- Wallis and the Median tests suggested that significant differences existed between the three groups of houses regarding the variable.

Figure 7.32: Percentage of observations' distribution regarding the DV frequent maintenance



Statement: My house needs maintenance frequently.

Figure 7.33: Means of group observations regarding the DV frequent maintenance

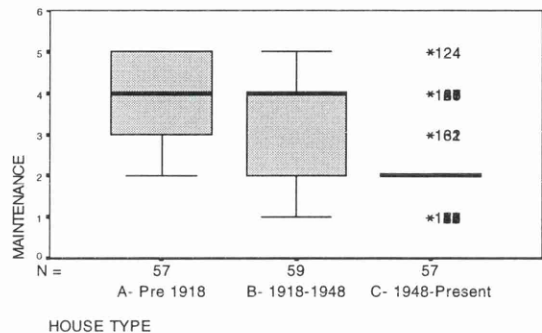


The two figures 7.32 and 7.33 imply that problems of maintenance intensify among type A houses followed by houses of type B, while few houses among type C needed

continuous maintenance. 74% of type A, and 58% of type B users think that their houses need endless maintenance compared to only 19% of house C users (figure 7.32).

Figure 7.34 indicates that among houses of type A more users reported the continuous need for maintenance compared to fewer users among type B. Few cases were reported among type C houses (outliers).

Figure 7.34: Boxplot of score distribution within groups for the DV the need for endless maintenance



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Therefore the need for continuous maintenance is a problem associated with type A and B houses.

Further investigation of the maintenance of old houses as one reason for users to prefer living in new houses to old ones will be carried out in chapter nine.

7.3. CORRELATION BETWEEN VARIABLES OF PART THREE OF THE HOUSE USER QUESTIONNAIRE

For further analysis of the results of part three of the house user questionnaires, and to examine interrelationships between variables within the context of each house typology identified earlier as A, B, C, the *Chi-square* crosstabulation statistical procedure was carried out on each of the three house groups. It investigates possible associations between different variables i.e. when the value of X^2 exceeded the CV at level $p \leq 0.05$. According to results reported in tables 7.17, 7.19, 7.21, the null hypothesis of no relationship between variables is rejected, and it was concluded that associations existed between different variables listed under the column IVs by DVs.

To determine the size of correlation coefficient, Spearman and Kendalls non- parametric rank correlation tests were carried on different variables within each house group. Results are listed in tables 7.18, 7.20, 7.22 (for more details about the Spearman's and the Kendall's correlation tests refer to *Chapter six*, 6.2.3).

Accordingly, variables that showed high to moderate correlations are considered by this research.

7.3.1. Type A Houses

Table 7.17 lists the result of *Chi*- square crosstabulation conducted on group A sample, that represents the traditional house in Palestine. Only significantly associated variables are considered i.e. $X^2 \geq 26.30, 21.03, df= 16, 12$ at $p \leq 0.05$.

Table 7.17 : *Chi*- square crosstabulation for associated variables of part three of the house user questionnaire (type A houses)

Type A houses IV by DVS	N	DF	X ²	P	CV
Quality of internal daylight by high humidity levels	57	16	37.057	0.002	26.30
Lack of sunshine inside by poor natural ventilation	57	12	45.045	0.000	21.03
Lack of sunshine inside by frequent need for maintenance	57	12	22.265	0.035	21.03
Lack of sunshine inside by quality of internal daylight	57	16	30.235	0.017	26.30
Lack of sunshine inside by small kitchen size	57	16	34.176	0.005	26.30
Lack of sunshine inside by high humidity levels	57	16	39.887	0.001	26.30
High humidity levels by small kitchen size	57	16	27.127	0.040	26.30
High humidity levels by mismatched bathroom location	57	16	35.131	0.004	26.30
High humidity levels by poor natural ventilation	57	12	22.224	0.035	26.30
Lack of privacy by lack of interesting views	57	16	35.217	0.004	26.30
Small house size by thermal condition in summer	57	16	43.2	0.000	26.30
Small house size by lack of sunshine inside	57	16	39.505	0.001	26.30
Small house size by poor natural ventilation	57	12	38.968	0.000	21.03
Mismatched bathroom location by high humidity levels	57	16	35.131	0.004	26.30
Mismatched bathroom location by small kitchen size	57	16	128.23	0.000	26.30
Mismatched bathroom location by poor natural ventilation	57	12	21.820	0.040	21.03
Frequent need for maintenance by high humidity levels	57	12	24.814	0.016	21.03
User overall satisfaction by mismatched bathroom location	57	16	41.621	0.000	26.30
User overall satisfaction by small kitchen size	57	16	33.769	0.000	26.30

CV of X². X² must be equal or more the stated value to be significant at $p \leq 0.05$ (Clegg, 1997: 175)

Again, significantly associated variables of part three are tested for correlation within sample houses of type A. Spearman’s as well as Kendall’s correlation tests are carried out. Table 7.18 lists significantly associated variables. However, correlations that are considered by this research are of the Moderate i.e. significance 0.04- 0.07 , to high i.e. significance 0.70- 0.90, indicating marked and substantial relationships between variables (Connolly & Sluckin, 1971: 154) (*Chapter 6*, pp. 163-164).

Table 7.18 : Spearman and Kendall tests for Correlation between associated variables of part three of the house user questionnaire (type A)

IVs by DVS	Spearman's rho Test			Kendall's tau-b		
	N	rho	AP	tau-b	P	AP
Lack of sunshine inside by poor natural ventilation	57	0.592	0.000	0.539	0.000	0.05
Lack of sunshine inside by quality of daylight	57	0.489	0.000	0.446	0.000	0.05
Lack of sunshine inside by high humidity levels	57	0.493	0.000	0.442	0.000	0.05
High humidity levels by the frequent need for maintenance	57	0.410	0.001	0.357	0.002	0.05
Small house size by small kitchen size	57	0.447	0.000	0.384	0.001	0.05
Small house size by lack of sunshine inside	57	0.480	0.000	0.429	0.000	0.05
Small house size by poor natural ventilation	57	0.478	0.000	0.436	0.000	0.05
Mismatched bathroom location by small kitchen size	57	0.621	0.000	0.511	0.000	0.05
Mismatched bathroom location by poor natural ventilation	57	0.489	0.000	0.432	0.000	0.05
Small kitchen size by poor natural ventilation	57	0.584	0.000	0.516	0.000	0.05
User overall satisfaction by small house size	57	-0.404	0.002	-0.348	0.002	0.05
User overall satisfaction by lack of sunshine inside	57	-0.376	0.004	-0.333	0.003	0.05
User overall satisfaction by mismatched bathroom location	57	-0.360	0.006	-0.315	0.005	0.05

CV of Spearman's rho. Rho must be equal to or more than the stated value to be significant

For N= 30, CV= 0.364 at $p \leq 0.05$ (Clegg, 1997:182)

N= 55, $r \geq 0.266$ at level $p= 0.05$, 0.345 at level $p= 0.01$ (Mark, 1996: 381)

N=60, $r \geq 0.254$ at level $p= 0.05$, 0.330 at level $p= 0.01$ (Mark, 1996: 381)

Correlations under column IVs by DVs yielded substantial relationships. Thus lack of sunshine inside was correlated with poor natural ventilation ($\rho= 0.592$, $\tau\text{-}b= 0.539$, $p \leq 0.05$), quality of internal daylight ($\rho= 0.489$, $\tau\text{-}b= 0.446$, $p \leq 0.05$), and discomfort due to high humidity levels ($\rho= 0.493$, $\tau\text{-}b= 0.442$, $p= 0.01$).

Correlations between lack of sunshine inside and other variables mentioned could lead to the conclusion that among type A houses, dwellings that suffer from lack of sunshine inside and do not receive sufficient quantity of natural light are most likely to suffer from poor ventilation. This could be related to the introverted layout of type A houses, where different spaces within the house open onto an enclosed courtyard. As few small windows open to the outside, these houses receive sun indirectly via the courtyard. Results of data analysis presented earlier in this chapter proved that a large percentage of houses (54%) among type A receive sun for less than 4 hours daily during winter time, thus most houses among type A lack sunshine inside and do not receive sufficient quantity of light.

Correlation between lack of sun and poor natural ventilation could also be linked to the introverted house layout of type A. Ventilation among these houses is via the courtyard as very small windows open to the outside contribute very little to natural ventilation. Also correlation between variables related to house environmental condition could lead to the conclusion that lack of sunshine accompanied with poor ventilation could have contributed to increase discomfort caused by high humidity levels inside houses of the sample.

Discomfort from high humidity levels was correlated with the frequent need for maintenance ($\rho = 0.410$, $\tau_b = 0.357$, $p \leq 0.05$). Therefore it could be concluded that houses among type A that suffer from discomfort due to high humidity levels are more likely to need frequent maintenance. Data analysis of this chapter revealed that among type A houses 58% were affected by discomfort as a result of high humidity levels.

In fact lack of proper maintenance among type A houses usually causes water penetration through walls during winter, which accumulates leading to continuous dampness problems. This could have raised the humidity levels inside these houses and intensified the need for maintenance. However, results of the investigation showed that the need for maintenance was regarded as more pressing among type A houses; 74% of the sample houses proved to be in need for frequent maintenance.

Correlations were found between small house size in relation to family size and small kitchen size ($\rho = 0.447$, $\tau_b = 0.384$, $p \leq 0.05$), lack of sunshine inside ($\rho = 0.480$, $\tau_b = 0.429$, $p \leq 0.05$), and poor natural ventilation ($\rho = 0.478$, $\tau_b = 0.436$, $p \leq 0.05$). These correlations could imply that, among type A, small houses in relation to family size are more likely to accommodate small kitchens. These houses also are more likely to suffer from lack of sunshine inside as well as poor natural ventilation. However from the data analysis of chapter seven, these houses were indicated as 53% of type A sample, and this could be a result of dividing large traditional houses of old Nablus into smaller units (Qamhieh, 1992).

Small houses of type A are more likely to suffer from bad ventilation and lack of sunshine inside. This could be due to the small size of windows used among this type of house, or it might be the result of poor planning when dividing large houses. Thus, some spaces inside these houses might not have proper ventilation or enough sunshine.

Small size houses were correlated with small kitchen size. Among type A houses, 72% of the sample houses had small kitchens, which were not originally part of the house but were added later. Originally, an outside space within the court was usually used for cooking (Yousof, 1996: 280).

Mismatched bathroom location was also correlated with small kitchen size ($\rho = 0.621$, $\tau\text{-}b = 0.511$, $p \leq 0.05$), and poor ventilation ($\rho = 0.489$, $\tau\text{-}b = 0.432$, $p \leq 0.05$), while small kitchen size was correlated with poor ventilation ($\rho = 0.584$, $\tau\text{-}b = 0.516$, $p \leq 0.05$). Correlation between mismatched location of bathrooms and the small kitchen size could suggest that problems of service areas (kitchen and bathroom) recurred simultaneously among sample A houses. However both of these spaces were added later to the house, usually without proper planning. Almost 75% of sample A houses suffer from mismatched bathroom location or small kitchen size. The two variables were both associated with poor ventilation, thus houses with small kitchens and mismatched bathrooms are most likely to suffer from bad ventilation, which could also be linked with poor planning.

Consequently it could be concluded that problems related to house condition that affect sample A houses correlate together and interact, with some problems possibly leading to or aggravating others. As was mentioned before, type A houses form the dense urban fabric of the old city of Nablus. Bad environmental and functional conditions among these houses could have resulted from recent alterations to their original layout, along with neglect, and lack of maintenance.

User overall satisfaction among type A houses was correlated negatively with each of the following variables: small house size in relation to family size ($\rho = -0.404$, $\tau\text{-}b = -$

0.348, $p \leq 0.05$), lack of sunshine inside ($\rho = -0.376$, $\tau\text{-}b = -0.333$, $p \leq 0.05$), and mismatched bathroom location ($\rho = -0.360$, $\tau\text{-}b = -0.315$, $p \leq 0.05$),

These interrelationships could prove that satisfaction among users of type A houses is more likely to be influenced by house size, sunshine inside the house, as well as the bathroom location within the house layout.

Size of correlation coefficient as a result of different variables' correlations with user overall satisfaction yielded that small house size in relation to family size has the highest value of 0.404. This could suggest that this variable is the most influential on user's satisfaction among type A houses.

7.3.2. Type B Houses

Table 7.19 reports the result of *Chi*- square crosstabulation carried out on different variables of group B houses which represent the colonial house in Palestine.

Table 7.19 : *Chi*- square crosstabulation for associated variables of part three of the house user questionnaire (type B houses)

Type B houses IV by DVS	N	DF	X ²	P	CV
Quality of internal daylight by lack of sunshine inside	59	16	45.531	0.000	26.30
Quality of internal daylight by lack of privacy	59	16	42.165	0.000	26.30
Quality of internal daylight by high humidity levels	59	16	29.099	0.023	26.30
Lack of sunshine inside by frequent need for maintenance	59	16	38.631	0.001	26.30
Lack of sunshine inside by quality of internal daylight	59	16	45.531	0.000	26.30
Lack of sunshine inside by high humidity levels	59	16	44.051	0.000	26.30
Lack of sunshine inside by thermal condition in summer	59	16	39.623	0.003	26.30
High humidity levels by mismatched bathroom location	59	16	30.091	0.018	26.30
Thermal condition in summer by poor natural ventilation	59	16	33.290	0.007	26.30
Poor ventilation by lack of interesting views	59	16	33.056	0.007	26.30
Lack of privacy by lack of sunshine inside	59	16	29.939	0.018	26.30
Lack of privacy by quality of internal daylight	59	16	42.165	0.000	26.30
Lack of privacy by poor natural ventilation	59	16	27.958	0.032	26.30
Small house size by quality of internal daylight	59	16	30.797	0.014	26.30
Small house size by lack of interesting views	59	16	35.579	0.003	26.30
Small house size by poor natural ventilation	59	16	39.721	0.001	26.30
Mismatched bathroom location by high humidity levels	59	16	30.091	0.018	26.30
Mismatched bathroom location by small kitchen size	59	16	107.38	0.000	26.30
Mismatched bathroom location by poor natural ventilation	59	16	30.378	0.016	26.30
Small kitchen size by poor natural ventilation	59	16	35.031	0.004	26.30
Small kitchen size by mismatched bathroom location	59	16	107.38	0.000	26.30
User overall satisfaction by poor natural ventilation	59	16	26.654	0.045	26.30

CV of X². X² must be equal or more the stated value to be significant at $p \leq 0.05$ (Clegg, 1997: 175)

The two correlation tests, Spearman’s and Kendal’s, were carried out on associated variables of Part Three within type B house group. Table 7.20 lists significant correlations between variables of substantial and marked relationships (Connoly & Sluckin, 1971: 154) (chapter 6).

Table 7.20 : Spearman and Kendall tests for Correlation between associated variables of part three of the house user questionnaire (type B)

IVs by DVS	Spearman’s rho Test			Kendall’s tau- b		
	N	rho	AP	tau-b	AP	P
Lack of sunshine inside by quality of internal daylight	59	0.542	0.000	0.490	0.000	0.05
Lack of sunshine inside by high humidity levels	59	0.440	0.000	0.398	0.000	0.05
Mismatched bathroom location by small kitchen size	59	0.871	0.000	0.796	0.000	0.05
User overall satisfaction by thermal condition in summer	59	-0.428	0.001	-0.363	0.001	0.05
User overall satisfaction lack of sunshine inside	59	-0.386	0.003	-0.337	0.002	0.05
User overall satisfaction by lack of interesting views	59	-0.432	0.001	-0.366	0.001	0.05

CV of Spearman’s rho. Rho must be equal to or more than the stated value to be significant
For N= 30, CV= 0.364 at $p \leq 0.05$ (Clegg, 1997:182)
N= 55, $r \geq 0.266$ at level $p= 0.05$, 0.345 at level $p= 0.01$ (Mark, 1996: 381)
N=60, $r \geq 0.254$ at level $p= 0.05$, 0.330 at level $p= 0.01$ (Mark, 1996: 381)

Table 7.20 indicates interrelationships between different variables. Correlations were found between lack of sunshine inside and quality of internal day lighting conditions ($\rho= 0.542$, $\tau\text{-}b= 0.490$, $p \leq 0.05$), as well as discomfort caused by high humidity levels ($\rho= 0.440$, $\tau\text{-}b= 0.398$, $p \leq 0.05$).

From data analysis raised by this chapter, almost 25% of sample B houses were indicated as suffering from lack of sunshine indoors, while 51% suggested receiving insufficient quantity of natural light inside their houses, and 38% of the houses reported discomfort due to high humidity levels. It could be concluded that some of the houses among type B sample suffer from lack of sunshine inside and this could decrease the quantity of natural light inside these houses.

This obvious result could be related to window size in relation to space size, or it could be due to the orientation of some of these houses causing a lack of sunshine. High humidity levels reported by more than one third of type B house sample could be due to the lack of sunshine inside the building.

Although correlation between the same variables was indicated among sample A houses, the size of the problem is much larger than that suggested among the type B house sample.

Mismatched bathroom location was correlated at a high level with small kitchen size ($\rho = 0.871$, $\tau\text{-}b = 0.796$, $p \leq 0.05$), and on almost moderate level with poor natural ventilation ($\rho = 0.385$, $\tau\text{-}b = 0.342$, $p \leq 0.05$). High correlation between inappropriate bathroom location and small kitchen size could be due to problems related to service area among type B houses. However, service areas were originally built in these houses, and were not added later as in sample A houses, it seems that size and location of these areas were not planned. Previous investigations of the functional aspects of the house implied that the majority of type B houses suffer from problems related to size of kitchen and location of bathroom. 54% suffer from inappropriate bathroom location while 49% reported small kitchen size within their house layouts.

Overall satisfaction among type B houses was correlated negatively with: thermal condition in summer ($\rho = -0.428$, $\tau\text{-}b = -0.363$, $p \leq 0.05$), lack of sunshine inside ($\rho = -0.386$, $\tau\text{-}b = -0.337$, $p \leq 0.05$), and lack of interesting views ($\rho = -0.432$, $\tau\text{-}b = -0.366$, $p \leq 0.05$). It could be concluded that overall satisfaction among type B users is more likely to be influenced by the thermal comfort condition of the house during summer, sunshine inside and interesting views. By comparing the size of correlation coefficient of user overall satisfaction and different variables, it could be concluded that the most impact on user satisfaction could be from the interesting views variable. This could be due to the fact that this type of houses has extroverted layouts which open to the outside.

7.3.3. Type C Houses

Significant association between different variables of part three of the house user questionnaire according to *Chi*-square crosstabulation within sample houses of type C is reported in table 7.21.

Table 7.21 : Chi- square crosstabulation for associated variables of part three of the house user questionnaire (type C houses)

Type C houses IV by DVS	N	DF	X ²	P	CV
Quality of internal daylight by lack of privacy	57	16	50.317	0.000	26.30
Quality of internal daylight by thermal condition in summer	57	16	28.415	0.001	26.30
Lack of sunshine inside by poor natural ventilation	57	16	28.161	0.030	26.30
Lack of sunshine inside by lack of views	57	16	38.313	0.001	26.30
Lack of sunshine inside by high humidity levels	57	16	59.829	0.000	26.30
Lack of sunshine inside by thermal condition in summer	57	16	36.114	0.003	26.30
High humidity levels by small kitchen size	57	16	75.796	0.000	26.30
High humidity levels by mismatched bathroom location	57	16	57.797	0.000	26.30
High humidity levels by poor natural ventilation	57	16	61.992	0.000	26.30
High humidity levels by frequent need for maintenance	57	16	34.902	0.004	26.30
Lack of privacy lack of interesting views	57	16	29.349	0.022	26.30
Lack of privacy quality of internal daylight	57	16	50.317	0.000	26.30
Small house size by quality of internal daylight	57	16	26.911	0.042	26.30
Small house size by lack of interesting views	57	16	36.197	0.003	26.30
Small house size by poor natural ventilation	57	16	37.124	0.002	26.30
Small house size by thermal condition in summer	57	16	29.640	0.002	26.30
Small house size by mismatched bathroom location	57	16	39.971	0.001	26.30
Small house size by small kitchen size	57	16	35.913	0.003	26.30
Small house size by frequent need for maintenance	57	16	28.001	0.032	26.30
Mismatched bathroom location by high humidity levels	57	16	57.797	0.000	26.30
Mismatched bathroom location by small kitchen size	57	16	180.16	0.000	26.30
Small kitchen size by poor natural ventilation	57	16	47.511	0.000	26.30
Small kitchen size by mismatched bathroom location					
User overall satisfaction by lack of privacy	57	16	27.798	0.033	26.30
User overall satisfaction by small kitchen size	57	16	34.425	0.005	26.30
User overall satisfaction by high humidity levels	57	16	32.137	0.010	26.30
User overall satisfaction by mismatched bathroom location	57	16	44.251	0.000	26.30
User overall satisfaction by lack of interesting views	57	16	29.566	0.020	26.30
User overall satisfaction by poor natural ventilation	57	16	40.630	0.001	26.30

CV of X². X² must be equal or more the stated value to be significant at $p \leq 0.05$ (Clegg, 1997: 175)

Table 7.22 reports results of significant correlations indicated between different variables of part three among sample C houses as a result of the Spearman's and Kendall's correlation tests.

Table 7.22 : Spearman and Kendall tests for Correlation between associated variables of part three of the house user questionnaire (type C)

IVs by DVS	Spearman's Test		rho	Kendall's tau- b		P
	N	rho	AP	tau-b	AP	
Quality of internal daylight by lack of privacy	57	0.515	0.000	0.469	0.000	0.05
Lack of sunshine inside by lack of views	57	0.392	0.003	0.360	0.002	0.05
Lack of sunshine inside by high humidity levels	57	0.517	0.000	0.476	0.000	0.05
High humidity levels by small kitchen size	57	0.614	0.000	0.558	0.000	0.05
High humidity levels by poor natural ventilation	57	0.507	0.000	0.473	0.000	0.05
Small house size by lack of interesting views	57	0.522	0.000	0.451	0.000	0.05
Small house size by poor natural ventilation	57	0.412	0.001	0.371	0.002	0.05
Small house size by mismatched bathroom location	57	0.600	0.000	0.545	0.000	0.05
Small house size by small kitchen size	57	0.489	0.000	0.443	0.000	0.05
Small house size by frequent need for maintenance	57	0.487	0.000	0.437	0.000	0.05
Mismatched bathroom location by high humidity levels	57	0.650	0.000	0.604	0.000	0.05
Mismatched bathroom location by small kitchen size	57	0.891	0.000	0.860	0.000	0.05
Small kitchen size by poor natural ventilation	57	0.555	0.000	0.508	0.000	0.05
User overall satisfaction by quality of internal daylight	57	-0.486	0.000	-0.433	0.000	0.05
User overall satisfaction by high humidity levels	57	-0.485	0.000	-0.429	0.000	0.05
User overall satisfaction by mismatched bathroom location	57	-0.393	0.002	-0.353	0.002	0.05
User overall satisfaction by lack of interesting views	57	-0.480	0.000	-0.418	0.000	0.05
User overall satisfaction by lack of sunshine inside	57	-0.444	0.001	-0.398	0.001	0.05

CV of Spearman's rho. Rho must be equal to or more than the stated value to be significant

For N= 30, CV= 0.364 at $p \geq 0.05$ (Clegg, 1997:182)

N= 55, $r \geq 0.266$ at level $p= 0.05$, 0.345 at level $p= 0.01$ (Mark, 1996: 381)

N=60, $r \geq 0.254$ at level $p= 0.05$, 0.330 at level $p= 0.01$ (Mark, 1996: 381)

Correlations were found between quality of internal day lighting conditions and lack of privacy ($\rho = 0.515$, $\tau\text{-}b = 0.469$, $p \leq 0.05$). It could be concluded that houses with inadequate level of privacy are more likely to suffer from bad lighting conditions. This could be explained by the fact that feeling of lack of privacy among users of type C houses might result in continuous use of curtains or other devices that cover windows to ensure privacy. This could result in reduction of the amount of light received by these houses. This result could apply to houses among type C that receive insufficient quantity of natural light. However by referring to previous results of chapter seven (fig 7.23) it was found that around 60% of houses among type C sample do not suffer from this problem. Thus this could be applied only to houses that suffer from reception of insufficient quantity of natural light (almost 30% of sample C houses), or those whose houses do not provide privacy from next door neighbours, i.e. 31% of the sample. Thus

this problem could exist on a narrow scale among houses of type C. However this could be linked to extroverted layouts of type C houses, where orientation is towards the outside, thus in some cases less privacy could be felt due to windows opening directly onto next-door houses.

Lack of sunshine inside was correlated with lack of views ($\rho = 0.392$, $\tau\text{-}b = 0.360$, $p \leq 0.05$), and with discomfort caused by high humidity levels ($\rho = 0.517$, $\tau\text{-}b = 0.476$, $p \leq 0.05$). Results of data analysis carried out earlier in this chapter showed that only 17.6% of type C sample houses suffer from lack of sunshine inside, 21.1% of the houses do not have interesting views, and 22.8% suffer from discomfort caused by high humidity levels. Therefore it could be concluded that although correlations were found between different variables this could be on a very narrow scale among the type C sample.

Therefore among sample C houses, dwellings suffering from lack of sunshine inside (17.6%) are more likely to suffer from lack of interesting views as well as discomfort due to high humidity levels. This could be related to window size and house orientation.

Discomfort due to high humidity levels was correlated with small kitchen size ($\rho = 0.614$, $\tau\text{-}b = 0.558$, $p \leq 0.05$), and with poor house ventilation ($\rho = 0.507$, $\tau\text{-}b = 0.473$, $p \leq 0.05$). It could be argued that levels of relative humidity rise quickly inside a small kitchen because of its small volume. Therefore, it requires an effective ventilation system, which ensures a larger number of air changes per hour than that required by a larger kitchen. It appears that occupants of type C houses whose kitchens are small had a problem with high humidity and lack of ventilation in their kitchens. This could have affected their overall judgement / attitude towards the ventilation system of their houses. Small kitchen was also correlated with poor ventilation ($\rho = 0.555$, $\tau\text{-}b = 0.508$, $p \leq 0.05$). However as was indicated earlier in the chapter, type C houses suffered the least from high humidity levels. 22.8% of the houses reported suffering from uncomfortable humidity levels, also a minority of houses among the sample were accommodating small kitchens, i.e. almost 16% . It could be concluded that correlations between variables mentioned occurred only among a minority of houses could be negligible.

Among type C sample less than 11% indicated small house size in relation to family size, thus correlations found between this variable and other variables will be neglected. Also correlations with mismatched bathroom location, and small kitchen size will be neglected as less than 16% suggested possible mismatch of their bathroom location, or small size of their kitchen. It could be concluded that problems related to service area (kitchen and bathroom) were indicated to a limited extent among sample C houses and this was correlated with poor ventilation among sample houses.

User overall satisfaction was correlated negatively with different variables: quality of internal day lighting conditions ($\rho = -0.486$, $\tau_b = -0.433$, $p \leq 0.05$), discomfort caused by high humidity levels ($\rho = -0.485$, $\tau_b = -0.429$, $p \leq 0.05$), mismatched bathroom location ($\rho = -0.393$, $\tau_b = -0.353$, $p \leq 0.05$), lack of interesting views ($\rho = -0.480$, $\tau_b = -0.418$, $p \leq 0.05$), and with lack of sunshine inside ($\rho = -0.444$, $\tau_b = -0.398$, $p \leq 0.05$). The results of these correlations could imply that different factors could have an impact on type C house user's satisfaction. These factors are:

- Quality of internal day lighting conditions
- Humidity levels inside the house
- Bathroom location
- Interesting views
- Sunshine inside

By comparing the size of correlation coefficient of different variables with users' overall satisfaction it was concluded that user's satisfaction could be more affected by the quality of internal daylight condition of the house and also by levels of humidity, than by views. To examine overall user satisfaction next to the house type, the *Chi*- square test was employed to the whole sample i.e.173 houses which represent the three house typologies A, B, C (table, 7.23). Accordingly the null hypothesis was refuted and it was concluded that the three house types differed significantly in terms of their overall satisfaction. ($X^2 = 29.216$, $df=8$, $CV= 15.51$).

7.23 : Chi- square test result on user overall satisfaction by the house type.

IVs by DVs	N	X ²	DF	P	CV
Overall satisfaction by the house type	173	29.216	8	0.000	15.51

CV of X² . X² must be equal or more the stated value to be significant at p= 0.05 (Clegg, 1997: 175)

The Spearman and Kendall rank correlation tests were carried out on the two variables user overall satisfaction and house type. The result is listed in table 7.24.

Table 7.24: Spearman and Kendall tests for correlation between users’ overall satisfaction and house type.

IVs by DVS	Spearman’s rho Test			Kendall’s tau- b		
	N	rho	AP	tau-b	AP	P
Overall satisfaction by the house type	173	0.331	0.000	0.289	0.000	0.01
N= 150, $r \geq 0.159$ at level $p= 0.05$, 0.210 at level $p= 0.01$ (Mark, 1996: 381)						
N= 175, $r \geq 0.148$ at level $p= 0.05$, 0.194 at level $p= 0.01$ (Mark, 1996: 381)						

According to Mark (1996) correlation between variables is significant at $p \leq 0.01$ ($N=173$, $\rho=0.331$, $\tau\text{-}b=0.289$). It was concluded that residents of the three house types are more likely to have different levels of satisfaction. On the other hand previous investigations (6.3.3) revealed that users among type C houses reported the highest satisfaction compared to lowest levels suggested by type A house users Figure, 6.13, 6.14).

To summarise, the traditional houses of the old city of Nablus were associated with poor environmental and functional aspects of house condition, in addition to a low level of user satisfaction. On the other hand, the new modern houses reported good house conditions and a high level of user satisfaction. This could be attributed to the architect as the new houses were designed by architects who could have contributed to the improvement in different aspects of the house condition which eventually yielded satisfaction among users of these houses. The colonial central-hall houses reported better house condition and higher level of user satisfaction compared to type A houses but worse house condition and lower level of user overall satisfaction if compared to houses of type C.

7.4 CONCLUSIONS

The data analysis of this chapter brought forward some aspects of the house condition of the sample houses for evaluation, therefore the three house types were suggested to have varied house conditions in terms of most of the variables tested.

Accordingly, the three house types A (the traditional house), B (the colonial house), and C (the modern house) proved to have different house conditions in terms of:

- Quality of internal day lighting conditions
- Lack of sunshine inside
- Discomfort caused by high humidity levels
- Poor natural ventilation
- Lack of interesting view
- Small house size in relation to family size
- Mismatched bathroom location
- Small kitchen size
- The frequent need for maintenance

On the other hand, similar conditions among the three were found in terms of:

- Thermal conditions in summer
- Lack of privacy in relation to next-door neighbours and passers-by

However, results of data analysis of Part Three of the house user questionnaire may shed light on some aspects related to the **architect** and the **user** contribution to change in house design in Palestine:

1 - The architect's contribution:

The impact of the architect on the transformation of the Palestinian house layout and design could be discerned by:

- a) The architect's intervention to improve the environmental conditions of the house, so as to reduce or eliminate problems existing among older houses built without the consultation of architects. For example it was suggested from the data analysis of chapter seven that houses designed by architects receive more daylight and sunshine, suffer less from humidity problems if compared with the other two house types, and had better natural ventilation. Consequently, the improvement of the house's environmental condition reduced the need for maintenance among new houses.
- b) The architect's contribution in improving the layout of the house, as evident among type C houses from:
 - The size of the house which matched the family size
 - The appropriate location of bathrooms
 - The functional planning of the kitchen as well as improvement of the kitchen size.

Also new houses were oriented to better views, although this point was considered not relevant enough because location of the house could have influenced this orientation.

2- The user's contribution to change

Different problems examined yielded strong associations which could suggest that these problems recurred at the same time among houses within the sample investigated. Correlation tests carried out on each house typology revealed that old houses of type A were the most affected by various problems, thus influencing the user overall satisfaction. Therefore users of type A houses reported the least overall satisfaction among the sample.

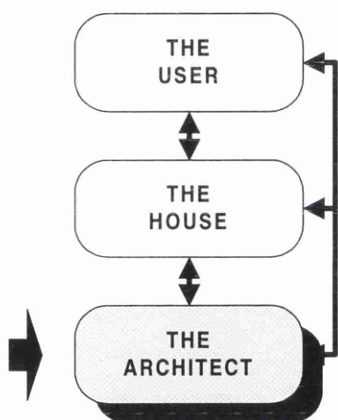
On the other hand, the house condition improved from type A to type B to type C houses, and problems decreased. As a result the user overall satisfaction increased from type A to type B to type C houses.

Development of type B house was mainly influenced by the user as the architect did not contribute to its emergence. A number of new requirements/ needs which resulted from a change in users' lifestyle were incorporated into the planning of this house type. Hence the level of user satisfaction with this house was higher than with type A house.

The overall result of this analysis can point to the user's role in revitalising change in house design, as users reported dissatisfaction with older houses, while a high level of satisfaction was indicated among users of new houses. As a result, it could be concluded that users preferred living in new houses; user's preference for old or new houses will be investigated further in chapter nine.

7.5. REFERENCES

- CASWELL, F. (1995): *Success in Statistics*, third edition, John Murray publishers, London, 136-147.
- CLEGG, F. (1997): *Simple Statistics, A course Book for the Social Sciences*, Cambridge University press, United Kingdom, Ch. 7, 8, 9, 12, 15.
- CONNOLLY, T.G. & SLUCKIN, W.(1971): *An Introduction to Statistics for the Social Sciences*, third edition, the Macmillan Press LTD, London.
- DANBY, M.(1973): “ The Design of Building in Hot- Dry Climates and Internal Environment”, in *Building International*, Applied Science Publishers Ltd., England, pp. 69.
- DANBY, M.(1984): “ The Internal Environmental Aspects of the Traditional Arab House and their Relevance to Modern Housing”, Proceeding of the colloquium held in the university of Newcastle Upon Tyne 15/16 March, pp.83-90.
- DUNHAM, D.(1960): “ The Courtyard House as a Temperature Regulator”, *The New Scientist*, 8 September, pp. 633-666.
- FRUDE, N.(1993): *A Guide to SPSS/PC+* Second edition, The Macmillan Press Ltd., London.
- GEORGE, D.& MALLERY, P.(1995): *SPSS/PC+ Step by step: a simple guide and reference*, Wadsworth Publishing Company, Belmont, Ch. 8, 11, 30.
- HAKIM, B.S. (1986): *Arabic- Islamic Cities: Building and Planning Principles*, KPI Limited and Routledge & Kegan Paul plc, London.
- MAQBOOL, N.H. (1987): *Demographic Conditions in the West -Bank* (in Arabic), Society of Arabic Studies, Jerusalem, pp.121.
- MARK, R. (1996): *Research Made Simple: A Handbook for Social Workers*, SAGE Publications, Thousand Oaks, London, New Delhi, p.381.
- NACHMIAS, D.& NACHMIAS, C. (1976): *Research Methods in the Social Sciences*, Edward Arnold, London, pp. 109-117, 286-295.
- NORUSIS, M. J.(1986): *The SPSS Guide to Data Analysis*, SPSS Inc., USA.
- OLGYAY, V.(1973): *Design with Climate: Bioclimatic Approach to Architectural regionalism*, Princeton University Press, USA, pp. 53- 62.
- PETHERBRIDGE, G.T. (1978): “ Vernacular Architecture: The House and the Society”, in Mitchel ed., *Architecture of the Islamic World*, Thames and Hudson, London, pp. 199.
- QAMHIEH, K.(1992): *Saving the Old Town of Nablus, A Conservation Study*, Unpublished Ph.D. Thesis, University of Glasgow, CH. 5.
- SCOTTISH LOCAL AUTHORITIES SPECIAL HOUSING GROUP, (1980): *The Tenants' View*, Edinburgh.
- SPSS Base 7.0 Applications Guide (1996): SPSS Inc., USA.
- WEISS, N.A. (1995): *Introductory Statistics*, Fourth edition, Addison - Wesley Publishing Company, Inc., New York, England, Paris.
- YOUSOF, M.A.(1996): *Conservation of Cultural Heritage in the West bank: under occupation. The case of the old city of Nablus*, Unpublished Ph.D. Thesis, York university, CH. 7.
- ZA'NON,F. (1991): *Fertility Preferences of Arab Population in the West Bank*, Unpublished Ph.D. Thesis, Glasgow University.



8.Chapter Eight

The Architect and the Design Process of Private Houses

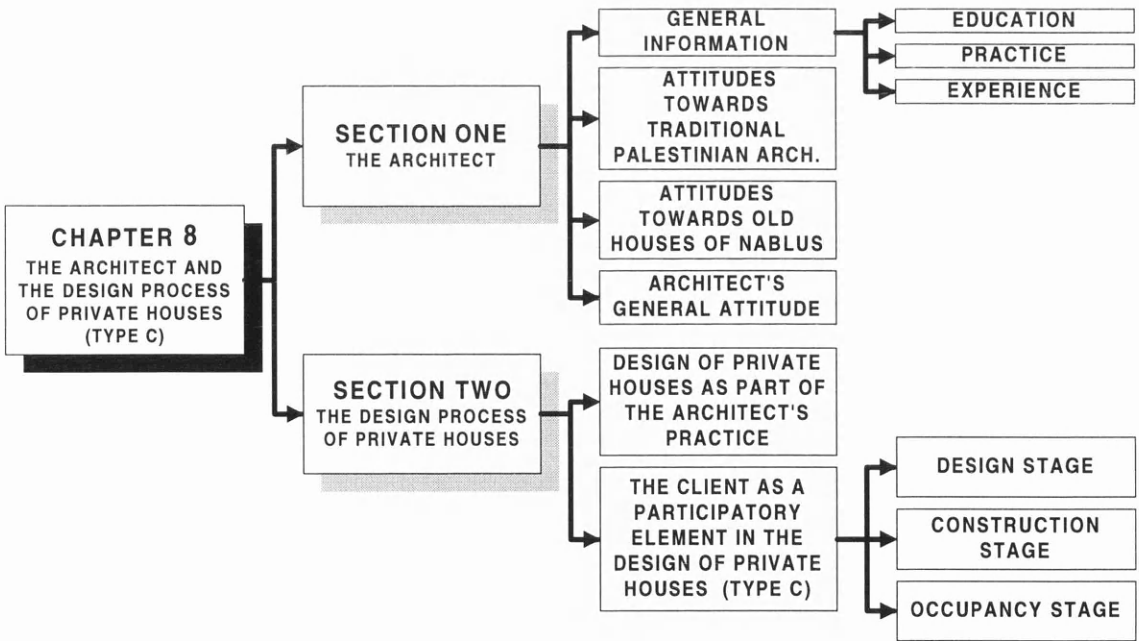
8.1. INTRODUCTION

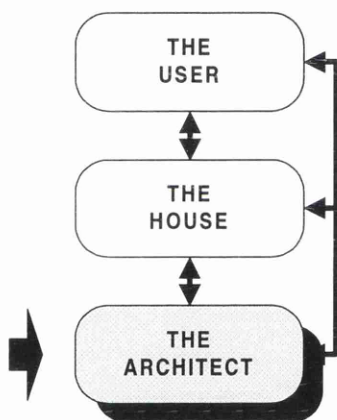
This chapter deals with aspects related to the Palestinian architect and the design process of private houses in Palestine. It analyses the data and reports the findings of the Architect Questionnaire as well as Part Six of the House User Questionnaire, **The Client as a Participatory Element in the Design Process of Private Houses**. Chapter eight is subdivided into two sections:

Section One investigates the Palestinian architect; his/ her background and attitude towards traditional and new architecture. It aims to reveal issues related to the extent of the architect’s contribution to the transformation of Palestinian house design.

Section Two examines the design process of private houses in Palestine. It aims to detect the extent of involvement of the designer architect, as well as the client (user) as a participatory element in the design of private houses. Consequently, the extent of both their contributions to the transformation of the Palestinian house design. Figure 8.1 illustrates the structure of chapter eight and describes the components of each of its two sections.

Figure 8.1: The structure of chapter eight showing the two sections and their components.





8. Section One

The Architect

The Analysis of the Architect
Questionnaire

8.2. SECTION ONE: THE ARCHITECT

Section one aims at investigating aspects related to the role the architect could have played in the transformation of Palestinian house design. Light will be shed on the architect’s background, and his/ her attitudes towards traditional Palestinian architecture. Therefore, this section will analyse the data and report the findings of Part One, Two, Three, and Five of the Architect Questionnaire , which comprises five parts.

Part 1 portrays general information about the architect; his/ her educational background, practice, and experience.

Part 2 investigates the architect’s attitude towards traditional concepts of Palestinian architecture.

Part 3 examines the architect’s attitude towards specific issues related to houses of Nablus of type A (the traditional Palestinian house) and type B (the colonial house in Palestine).

Part 5 evaluates the architect’s general attitude towards traditional and new architecture. (for more details about the architect questionnaire refer to Appendix no. 2)

The questionnaire survey was conducted in Nablus in December 1996. A sample of 17 local practising architects took part in the survey: 9 males i.e. 52.9% of the sample, and 8 females i.e. 47.1%. The sample represents 10 architectural offices out of a total of 17, i.e. 58.8% of the licensed architectural offices in Nablus at the time of the survey (for further information see chapter four).

According to West -Bank engineering association in December 1996, 175 architects (107 males i.e. 61.1%, and 68 females i.e. 38.9%) were registered and licensed for practice in Nablus. Table 8.1 compares the sample and Nablus architects in terms of distribution by sex (for more information about Nablus architects refer to chapter three).

Table 8.1: Distribution of sample and Nablus architects by gender in 1996.

	Sample Architects		Architects of Nablus	
	Count	%	Count	%
Male	9	52.9%	107	61.1%
Female	8	47%	68	38.9%

Source: The Engineering Association- Jerusalem, December 1996.

8.2.1. PART ONE of the Architect Questionnaire: General Information

This part examines the background of the architect; his/ her education, experience and practice. The main objective, however, is to establish links between the architect's educational and professional backgrounds and his/ her attitude towards traditional and new architecture.

I. The architect's education

The architect's education is investigated as an important factor that has a strong impact on the architect's practice, in that it could have an influence on his/ her attitude towards traditional and new architecture.

Architectural education, as a means for preparing architects for practice, has been discussed by several scholars. They have stressed its important role in the way architects shape their built environment.

Chadirji (1986:112) argues that architectural education is not only a process of transmission of accumulated architectural knowledge but also a preparation for architects to interact with their societies and be able to satisfy the needs and aspirations of their people. Huet, B. (1983:49) agrees with Chaderji; he addresses the need of preparing architects to appreciate their own culture, and understand how to translate the needs of their people through architectural design. Cejka (1982:90-100) puts the blame on the educational background of some architects for contributing to the negligence of their traditional heritage of architecture.

Primarily, the education of the sample architects is to be examined, then comparisons between attitudes of the sample architects from different educational backgrounds will be made. This will shed light on the extent of influence the architect's educational background might have on his/ her practice, and hence on his/ her role in generating change in house design in Palestine. The architect's educational background will be investigated by looking into both the architect's year and place of graduation.

a) Year of graduation

The architect's year of graduation is investigated as part of the architect's background. Examination later will reveal if senior and junior architects have different attitudes towards traditional and new architecture and whether their attitudes have been tempered by experience. As was mentioned earlier in chapter three, senior architects who are registered and licensed for practice in Nablus graduated by the late 60s, while most of the currently practising architects in Nablus (1996- 1997) are graduates of the 80s and 90s. The sample architects who participated in the architect case study graduated during the 70s, 80s, and 90s. Table 8.2 compares the year of graduation among the sample and Nablus architects.

Table 8.2 : distribution of sample and Nablus architects by the year of graduation.

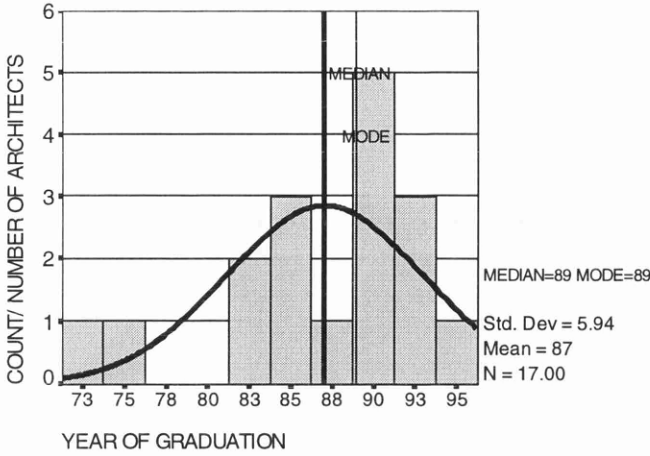
Year of Graduation	Sample Architects		Architects of Nablus	
	Count	%	Count	%
1960- 1969			2	1.1%
1970-1979	2	11.8%	14	8%
1980-1989	9	52%	63	36%
1990-1996	6	35%	96	54.9%

Source: The Engineering Association- Jerusalem, December 1996.

Table 8.2 suggests that 52% of the sample architects are graduates of the 80s, and that the sample architects graduation years were spread between the 1970s and 1990s. In contrast, the spread for the licensed architects of Nablus is between the 1960s and 1990s, while 54.9% of them graduated during the 90s.

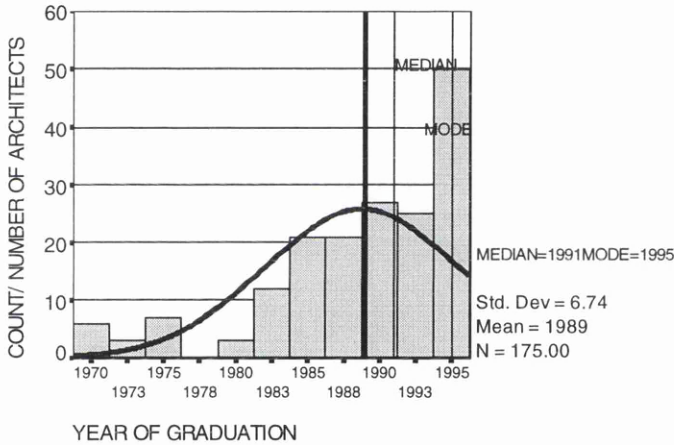
Figure 8.2 and 8.3 show the distribution of both the sample and Nablus architects by year of graduation. Figure 8.2 indicates the distribution of the sample architects, where the mean lies within the year 1987. While the median (the middle value among a distribution) and the mode (the most popular number among a distribution) both have the same value of 1989 above the mean. The standard deviation (SD) which measures the distribution of values around the mean is 5.94 (Clegg, 1997). The figure shows uneven distribution of number of graduates around the mean. The distribution is described as negatively skewed since both the median and the mode fall above the mean (Clegg, 1997).

Figure 8.2: Skew distribution of sample architects by year of graduation.



It also shows high extreme values amongst the number of architects, thus the curve was spread out with a high number of architects located around the mean.

Figure 8.3: Skew distribution of Nablus architects by the graduation year.



To compare the distribution by year of graduation among the sample as well as Nablus architects, the negatively skewed distribution of the Nablus architects' years of graduation (figure 8.3), suggests that more architects graduated during the 80s and 90s, thus the number of graduates increased sharply during 1994- 1996.

It is obvious by comparing the two figures 8.2 and 8.3 that within the distribution of the sample architects, more concentration is around the mean and this is due to fewer new graduates among the sample. The standard deviation is 5.94 compared to 6.74 among Nablus architects.

b)Place of graduation

Place of graduation among the sample architects is investigated, and this information will be used later to compare attitudes of architects by place of graduation. Universities from which architects among the sample graduated are classified into Palestinian or local universities, Arab, American, European, USSR, and other universities which includes universities of the Philippines, and Pakistan. Table 8.3 summarises the results and compares the sample and Nablus architects' place of graduation.

Table 8.3: Distribution of the sample and Nablus architects by place of graduation

Place of Graduation	Sample Architects		Architects of Nablus	
	Count	%	Count	%
1- Palestinian Un.	8	47%	80	45%
2- Arab Un.	6	35.3%	55	31.4%
3- American Un.			2	1.1%
4- European Un.			14	8%
5- USSR Un.	2	11.7%	16	9.1%
6- Others	1	5.9%	8	4.6%

Table 8.3 suggests that the larger percentage of graduates among both the sample and Nablus architects were from Palestinian universities; i.e. 47% of the sample, and 45% of Nablus architects. On the other hand, around one third of both the sample and Nablus architects graduated from Arab universities, mainly Egyptian; hence among the sample investigated, 35% graduated from Arab universities, compared to 31.4% among the Nablus architects. Additionally, a small percentage of graduates among the sample and Nablus architects graduated from different universities.

It could be concluded from the data of table 8.3 that the sample architects and Nablus architects investigated have similar distribution in terms of place of graduation. Therefore, results of the architect questionnaire carried out on the sample might give a good representation of Nablus architects as a whole.

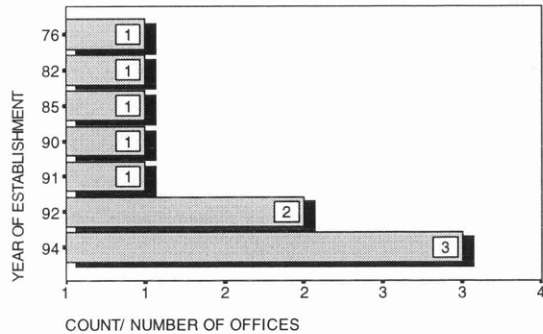
II. The architect's practice

The main objective behind the investigation of the architect's practice is to detect the extent of the architects' involvement in the design and building process of private houses in Palestine and thus to assess the role architects could have played in generating change in Palestinian house design. The architect's office will be examined in terms of year of establishment and staff.

Figure 8.4 indicates the distribution of sample offices by the year of their establishment, and does in fact suggest an increase in the number of offices in Nablus during the nineties (1992-1994). It could be argued here that the political and economical situation of the West- Bank had an impact on the building activity. During the seventies and

eighties the unstable political situation and the poor economic conditions that resulted, obstructed and limited investments in the construction sector.

Figure 8.4: Distribution of the sample offices by the year of establishment.



Therefore few architectural offices were functioning during that time. Nevertheless, aspiration for a more stable political situation and more prosperous economic conditions, as a result of initiating the peace process during the early nineties, encouraged the establishment of new architectural offices.

The architect's office was also investigated in terms of the staff it accommodates, in particular the number of architects per office.

Figure 8.5 : Skew distribution of the number of architects per office among sample offices

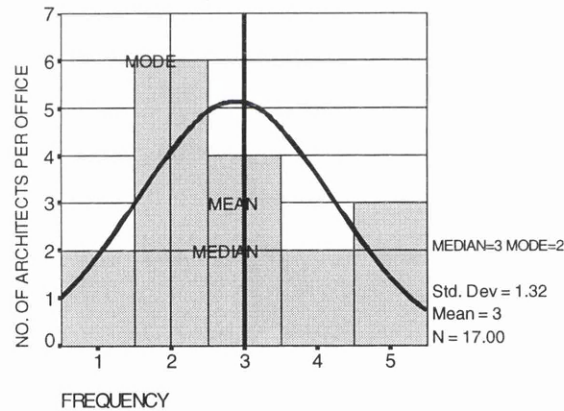


Figure 8.5 indicates the number of architects among the sample offices. The mean value was 3 architects per office, the median 3, the mode 2, and the standard deviation is 1.32; thus the curve is positively skewed since the median has the same value of the mean and the mode falls below the mean. The figure implies that more

offices have 2 to 3 architects while a few have 1, 4, and 5 architects.

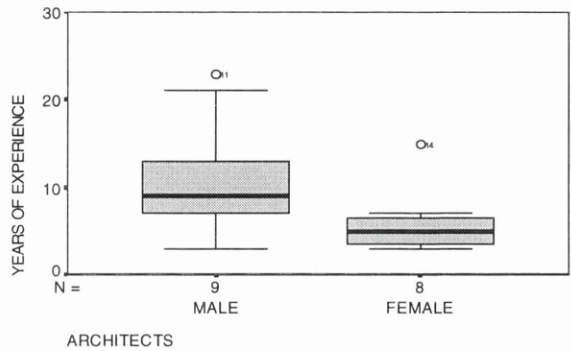
III. The architect's experience in house design

The architect's experience is investigated among the sample in terms of length of period worked and type of practice.

The period of practice among male architects was found to be longer than that of female architects; male architects' years of experience were spread between 3 and 23 years, while those for female architects spread between 3 and 7 years, with one outlier score of 15 years. Figure 8.6 compares graphically the spread of years of experience among male

and female architects. It could be concluded that female architects in Nablus are new in the profession, as evident from the fewer years of experience among females compared to male architects among the sample investigated.

Figure 8.6: Boxplot for the sample architects years of experience by gender



Additionally, the type of practice relative to house design among the sample architects was investigated; it was classified into: architectural design, contracting, supervising construction stages, interior design, landscaping, and conservation. Table 8.4 indicates the distribution of architects by type of practice.

Table 8.4: Distribution of the sample architects by the type of practice they operate relative to houses.

Type of Practice	Architects Count	%
1- Architectural design	17	100%
2- Contracting	3	18%
3- Supervising Construction Stages	16	94%
4- Interior Design	14	82%
5- Landscaping	7	41%
6- Conservation	3	18%

Table 8.4 indicates that besides architectural design, practised by all the sample, the majority of architects (94%) practice supervision during the construction stages which may be important for architects in order to guarantee the exact implementation of their design. A large percentage of the sample (82%) practice interior design, while landscaping, contracting, and conservation were practised to a lesser extent.

8.2.2. PART TWO of the Architect’s Questionnaire: Traditional Palestinian Architecture

Part two of the Architect Questionnaire investigates the architect’s attitude towards traditional architecture of Palestine. The main objective is to detect the role the Palestinian architect could have played in the abandonment of traditional concepts in

house design. Therefore, links can be established and lines drawn to measure the extent of architects' contribution to the transformation of house design in Palestine.

Different dependent variables were used for this investigation, namely:

- 1- Familiarity with traditional Palestinian architecture
- 2- The extent to which the architect's familiarity with traditional Palestinian architecture has affected his designs.
- 3- Borrowing design features from the traditional Palestinian architecture.
- 4- Advising clients of traditional concepts of design.
- 5- The viability of the introverted courtyard concepts in house design today.
- 6- The adoption of traditional concepts of design.

In order to test the null hypothesis, that no difference exist between observed and expected frequencies of the sample architects in their attitudes towards different variables, the *Chi*- square test was carried out on the six variables used. Table 8.5 summarises the results.

Table 8.5: Results of the Chi- square test on the six variables of part two of the architect questionnaire

DVs	X^2 <i>Chi</i> - Square	df	Asymp. Sig.	CV
1 Familiarity with traditional Palestinian architecture	9.941	1	0.002	3.841
2 Extent of effect of the architect's familiarity on his work	4.765	1	0.029	3.841
3 Borrowing traditional Architectural design features	13.235	1	0.000	3.841
4 Advise client of traditional concepts	2.882	1	0.090	3.841
5 Viability of introverted house design	7.118	1	0.008	3.841
6 Adoption of traditional design concepts	9.941	1	0.002	3.841

df= 1, For significance X^2 must be ≥ 3.841 at level $p= 0.05$, df= 1 (Clegg, 1997: 175)

The *Chi*- square test carried out on the six variables yielded significant differences between observed and expected frequencies of attitudes among the sample architects towards DV1,DV2, DV3, DV5, and DV6 with Chi- square values ; DV1= 9.941, DV2= 4.765, DV3= 13.235, and DV5= 7.118, DV6= 9.941 which were significant at level $p \leq 0.05$, df=1, CV= 3.841 (Clegg, 1997: 175).

On the other hand, for DV4 only the value of *Chi*- square = 2.882 did not exceed the critical value of 3.841 at level $p \leq 0.05$, df=1. Accordingly, the null hypothesis which assumes that no differences between observed and expected frequencies of attitudes existed between architects regarding the six variable is confirmed for DV4, and refuted for the rest of the variables, DV1, DV2, DV3, DV5, and DV6.

To sum up the test result, it was suggested that the sample architects have similar attitudes only towards advising clients of traditional architectural concepts.

On the other hand different attitudes were suggested towards familiarity with traditional Palestinian architecture, the extent to which the architect's familiarity of traditional concepts can affect his /her work, borrowing traditional architectural elements, the viability of the introverted courtyard concept of house design for today's life, and the adoption of traditional architectural concepts.

Table 8.6 lists the results of section two of the architect questionnaire. It indicates the questions used, count and percentage of observations among architects.

Table 8.6: Results of section two of the Architect Questionnaire

Question	Count	%	Count	%
1- Are you familiar with the traditional architecture of Palestine?	Yes 15	88.2%	No 2	11.8%
2- To what extent does this affect your designs?	Some ext. 13	76.5%	not at all 4	23.5%
3- Do you encourage borrowing design features from traditional Palestinian architecture?	Yes 16	94.1%	No 1	5.9%
4- Do you advise your client of traditional concepts of house design?	Yes 12	70.6%	No 5	29.4%
5- Is the introverted courtyard concept in house design a viable option for today's housing?	Yes 14	82.4%	No 3	17.6%
6- Do you adopt any traditional concepts in your designs?	Yes 15	88.2%	No 2	11.8%

Therefore the results of section two revealed that the majority of architects, i.e. 88.2% of the sample, consider themselves familiar with traditional Palestinian architecture, while 76.5% of the sample think that this familiarity affects their design to some extent.

However, the *Chi-* square test proved that significant differences existed between the sample architects and a hypothesised model of architects in relation to these two variables. **Therefore, it could be concluded that the majority of Palestinian architects are familiar with the traditional Palestinian architecture, and that a large percentage among them think that their designs can be affected to some extent as a result.**

94.1% of the sample architects encouraged borrowing elements from traditional Palestinian architecture, while 82.4% of the sample think that the introverted courtyard concept of house design is a viable design option for today's housing. The results indicate that 88.2% of sample architects adopt traditional concepts of Palestinian architecture in their designs; 77% in the design of private houses compared to 11.2% in public housing schemes. The *Chi*-square test carried out previously yielded significant differences between the sample architects and a hypothesised model in relation to these variables. In contrast, it was also revealed that 70.6% of the sample architects advise their clients of traditional concepts of design found in the traditional architecture of Palestine, and difference was insignificant according to the *Chi*-square test in terms of this variable.

Therefore it could be concluded that the majority of Palestinian architects are familiar with traditional Palestinian architecture and their work is affected to a certain extent by this familiarity. They encourage borrowing design features from traditional Palestinian architecture, and also believe that the introverted concept of house design is still viable today as a design option for housing. It could also be concluded that Palestinian architects adopt traditional concepts mostly in the design of private houses. But it seemed that architects to a certain extent are not eager to advise their clients of traditional concepts of house design.

However, by examining the development in private houses that has been taking place during the last 40- 50 years, i.e. the period of time during which architects started to influence the design of private houses in Palestine, it is obvious that the traditional concepts of design were not adopted at all; in fact it was abandoned for new schemes. **Therefore it could be inferred that although Palestinian architects today are familiar and aware of the traditional concepts of Palestinian architecture, and try to implement these when designing private houses, the actual implementation is fraught with difficulties.**

These difficulties were summarised by the sample architects as follows:

- a- Economic aspects: **47%** of the sample architects believe that the difficulty lies in the high cost of traditional concepts of design are to be applied today. This could be due to high cost of skills and materials.
- b- Social aspects: **35%** of the sample think that the difficulty is related to clients as it is difficult to convince them of traditional concepts of house design or that clients ask for new modern concepts of design, while **24%** of the sample architects believe that it is difficult to adopt traditional concepts of house design because of the gap in various aspects of life between past and present. They think that traditional concepts might not correspond to today's life.
- c- Technical aspects: **24%** of the sample architects think that traditional concepts of design require special skills and expertise which are not available today.
- d- Aspects related to planning and regulations: **25%** of the sample think that planning laws and regulations do not allow for the adoption of traditional concepts of architecture. For example planning regulations do not allow for building without setbacks as the traditional concepts necessitate.

Therefore, it could be inferred that even if Palestinian architects have tried to implement traditional concepts of design they are faced with several problems that make the adoption of new concepts an easier way out.

I. Interrelationships between variables of PART TWO of the architect questionnaire

It was assumed that the architect's educational background might affect his/ her attitude towards traditional and new architecture (*Chapter 4*). Therefore, to test this assumption, Spearman's rho correlation test was conducted on the six variables of part two (table 8.5) next to the two IVs; year and place of graduation. The test result yielded no significant correlation between variables.

Therefore it was concluded that attitudes of architects towards traditional and new architecture did not vary according to their year of graduation, and that senior architects of Nablus, and Palestinian architects in general, may not have different attitudes towards traditional and new Palestinian architecture compared to new graduates.

According to the Spearman correlation test, insignificant correlations were also found between different dependent variables, related to the architect's attitude towards traditional architecture of Palestine, and the IV place of graduation. **Therefore it could be concluded that architects among the sample, from different educational backgrounds have similar attitudes towards traditional and new architecture of Palestine, and that the place of graduation does not have an effect on the Palestinian architect's attitude towards old and new architecture.**

The no difference in attitude towards old and new architecture, shown by the Palestinian architects of this sample could be attributed to the fact that they were educated in schools that adopt common approach to architectural education. Therefore the almost universal approach to architectural education diminishes the difference in attitude between the sample architects with different educational backgrounds.

The Spearman correlation test was carried out on different variables of part two of the architect questionnaire. Table 8.7 lists significant correlations only.

Table 8.7 : Spearman test for Correlation between variables of part two of the architect questionnaire

IVs by DVS	Spearman's rho Test				
	N	rho	AP	CV	P
1-Familiarity with traditional Palestinian architecture by extent of effect of this familiarity on the architect's work.	17	0.658	0.004	0.56 0.475	0.05
2- Familiarity with traditional Palestinian architecture by advise client of traditional concepts.	17	0.566	0.018	0.56 0.475	0.05
3- Familiarity with traditional Palestinian architecture by viability of introverted house design.	17	0.789	0.000	0.56 0.475	0.05
4- Viability of introverted house design by advise client of traditional concepts.	17	0.717	0.001	0.56 0.475	0.05
5- Viability of introverted house design by borrowing traditional architectural elements.	17	0.540	0.025	0.56 0.475	0.05

N= 16 -18, rho \geq 0.56- 0.475, at level p= 0.05 (Clegg, 1997: 182)

Familiarity with traditional Palestinian architecture was significantly correlated with: the extent this familiarity affects the architect's work (N=17, rho= 0.658, CV= 0.56 for N=16/ CV=0.475 for N=18, p=0.05), advise clients of traditional concepts (N=17, rho= 0.566, CV= 0.56 for N=16/ CV=0.475 for N=18, p=0.05), and with viability of introverted house design (N=17, rho=0.789, CV= 0.56 for N=16/ CV=0.475 for N=18, p=0.05).

As a result of the strong positive correlation between these variables, it could be concluded that the design work of architects who are familiar with traditional Palestinian architecture is more likely to be affected by this familiarity. Also architects who are familiar with traditional Palestinian architecture are more likely to advise their clients of adopting traditional concepts of architecture. Moreover, architects who are familiar with traditional Palestinian architecture are more likely to believe that the introverted concept of house design is a viable design option for today's housing.

These results have raised an important issue: that the architect's familiarity with traditional concepts of design is essential to ensure continuity in traditional concepts of design in Palestine. Thus, if the architect is familiar with and has adequate knowledge of traditional concepts of design, his/ her work could be affected. Consequently, he/ she could advise clients of traditional concepts, and he/ she will have appreciation for the traditional introverted concept of house design. This result could be valuable for planning the architectural curriculum in Palestinian departments of architecture, where the traditional concepts of design could be taught, so students would become familiar with them.

Furthermore, viability of introverted house design was strongly correlated with: advise client of traditional concepts of design ($N=17$, $\rho=0.717$, $CV=0.56$ for $N=16$ / $CV=0.475$ for $N=18$, $p=0.05$), and with borrowing traditional architectural elements ($N=17$, $\rho=0.540$, $CV=0.56$ for $N=16$ / $CV=0.475$ for $N=18$, $p=0.05$). The obvious interrelationship between variables could suggest that architects who believe that the traditional introverted house design is a viable option for today's housing are more likely to advise their clients of traditional architectural concepts, and are more likely to encourage borrowing elements of traditional architecture.

8.2.3. PART THREE of the Architect Questionnaire: Houses of Nablus (Type A and B)

Part three of the Architect Questionnaire investigates the architect's attitude towards houses of Nablus of both types: A and B:

- 1- Type A: the traditional Palestinian house, pre- 1918.
- 2- Type B: the colonial house in Palestine, 1918- 1848.

It also examines the architect’s experience in the conservation of old houses. The main objective of this part is to accumulate information about the architects’ attitudes towards houses of both types A and B, then to relate the findings to the architect’s attitude towards traditional and new architecture. Eventually, information will be used to assess the extent of the architect’s contribution to the transformation of house design in Palestine.

I. Attitudes towards houses of type A and B in Nablus

The sample architects’ attitudes towards houses of type A and B in Nablus are investigated. Architects were to decide whether these houses are suitable for use today in their present physical condition, or after conservation, and whether these houses are compatible with new ones or not. Table 8.8 lists the results of the *Chi*- square test on variables of part three. It examines the null hypothesis which assumes that no differences exist between observed and expected frequencies of the sample architects in attitude towards different variables tested in the section.

Table 8.8: Results of the Chi- square test on variables of part three of the architect questionnaire.

DVs		X ² Chi- Square	df	Asymp. Sig.	CV
1- Are not suitable for use today	Type A	0.059	1	0.808	3.841
	Type B	2.882	1	0.090	3.841
2- Are suitable for use after conservation	Type A	13.235	1	0.000	3.841
	Type B	9.941	1	0.002	3.841
3- After conservation are compatible with new	Type A	9.941	1	0.002	3.841
	Type B	9.941	1	0.002	3.841

df= 1.For significance X² must be ≥ 3.841 at level p= 0.05 , df= 1 (Clegg, 1997: 175)

However the table indicates that significant differences do exist between observed and expected frequencies of the sample architects in attitude towards DV2; *Chi*- square = 13.235, 9.941, for type A and B respectively, df=1, CV= 3.841 at level p≤ 0.05. Also significant differences existed in attitude towards DV3; *Chi*-square = 9.941, for both A and B types, df=1, CV= 3.841 at level p≤ 0.05. On the other hand insignificant differences existed in attitude towards DV1; *Chi*- square = 0.059, 2.882, for type A and B respectively, df=1, CV= 3.841 at level p≤ 0.05.

According to the *Chi*-square test, the null hypothesis is confirmed for DV1 and refuted for DV2 and DV3. Therefore it could be concluded that Palestinian architects believe that houses of both types A and B (the traditional Palestinian house, and the colonial house in Palestine), are suitable for use after conservation. Also, they think that these houses are compatible with new houses after conservation.

Table 8.9 lists the results reported for part three of the Architect’s Questionnaire. It shows the number and percentage of architects in favour of and against each statement. The results revealed that a large percentage (i.e. 94.1%) of the sample architects believe that old houses of type A, located inside the old city of Nablus, are suitable for use after conservation. **This could suggest that the old traditional concepts of house design adopted in type A houses are still viable for use today, and it was the bad physical condition of most of these houses that made them unsuitable for current use.**

Table 8.9: Results of question 15 of part three of the Architect Questionnaire

Question	Old houses inside the old city -Type A-				Old houses outside the old city -Type B-			
	Yes		No		Yes		No	
	no.	%	no.	%	no.	%	no.	%
1 Not suitable for use today	9	52.9%	8	47.1%	5	29.4%	12	70.6%
2 Suitable for use after conservation	16	94.1%	1	5.9%	15	88.2%	2	11.8%
3 Even after conservation, are incompatible with new houses	2	11.8%	15	88.2%	2	11.8%	15	88.2%

II. Conservation of old houses of Nablus

Part three of the architect questionnaire investigates conservation of old houses in Nablus; the main objective is to detect the extent of architects’ involvement in the conservation of old houses in Palestine.

The *Chi*-square test was carried out to test the null hypothesis which assumes that no difference existed between observed and expected frequencies of the sample architects in their involvement in the conservation of old houses in Nablus. Results of the test revealed that significant differences do in fact exist; $\chi^2 = 4.756$, $df=1$, $CV= 3.841$, at level $p=0.05$ (Clegg, 1997: 175). Consequently, the null hypothesis is refuted.

The results have revealed that only less than one quarter of the architects among the sample (i.e. 23.5%) reported to have performed conservation work on old houses, and the rest (76.5%) have done no conservation work. Therefore it was revealed that little conservation work was reported to have been done by architects of Nablus. **This could suggest that conducting conservation procedures on old houses is not common; it could be that people prefer to spend their money on building new houses rather than on conserving old ones. Further investigation into this concept will be carried out in chapter nine.**

III. Interrelationships between variables

In order to compare the results of part three with results of part two of the architect questionnaire, Spearman’s correlation test was carried out on the two variables: old houses of type A suitable for use after conservation, and the viability of the introverted courtyard house as a design concept today. Table 8.10 lists the results. It yielded a significant correlation between the two variables (N= 17, rho= 0.540, p=0.05, CV= 0.56 for N= 16, CV= 0.475 for N=18) (Clegg, 1997: 182).

Table 8.10 : Spearman test for Correlation between two variables of the architect questionnaire.

IVs by DVS	Spearman’s rho Test				
	N	rho	AP	CV	P
- Old houses of type A suitable for use after conservation and the viability of the introverted courtyard house today.	17	0.540	0.025	0.56 0.475	0.05

N= 16 -18, rho ≥0.56- 0.475, at level p= 0.05 (Clegg, 1997: 182)

Therefore it could be concluded that Palestinian architects who consider that old houses of type A are suitable for use after conservation also believe that the introverted courtyard house concept of design is viable today as a design option for housing.

8.2.4. PART FIVE: The Architect’s General Attitude

To investigate the architect’s general attitude towards old and new concepts of design, the sample was asked whether the new architecture in Nablus should reflect old traditions, i.e. present a forward- looking image, or combine aspects of old and new. Results revealed that the whole sample i.e. 17 architects (100%) considered that the new architecture of Nablus should combine aspects of old and new styles. However

investigation was carried out further as to whether the architect would build his own house adopting new or traditional architecture. Table 8.11 lists the results.

Table 8.11: Distribution of observations by design concept of architect’s own house

		Count	%
1	Reflect old traditions	5	29.4%
2	Present a forward- looking image	1	5.9%
3	Combine aspects of old and new	11	64.7%

To test the null hypothesis which assumes no differences exist between observed and expected frequencies of the sample architects in their preference to adopt traditional, new or combined concept of architecture, the *Chi*- square test was carried out and the test result is listed in table 8.12.

Table 8.12: Results of the *Chi*-square test on the design concept of architect’s own house.

DV	X ² Chi- Square	df	Asymp. Sig.	CV
- The architect own house	8.941	2	0.011	5.991

df= 2. For significance X² must be ≥ 5.991 at level p= 0.05 , df= 2 (Clegg, 1997: 175)

Results of the *Chi*-square test proved that significant differences existed between observed and expected frequencies of the sample architect in terms of the variable; *Chi*-square 8.941, df= 2, CV= 5.991 at level p=0.05 (Clegg, 1997: 175). Therefore the null hypothesis is refuted, i.e. the two variables are related.

Figure 8.7: Bar chart showing the number of architects by the design concept of own house

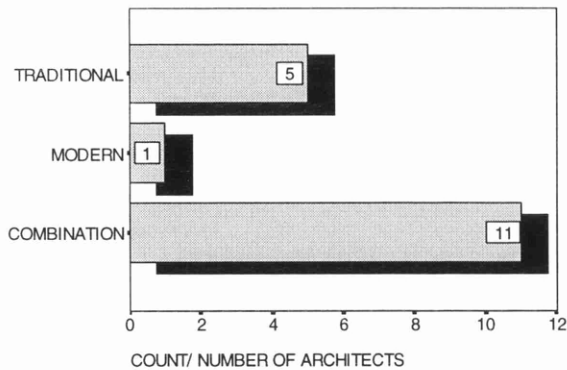
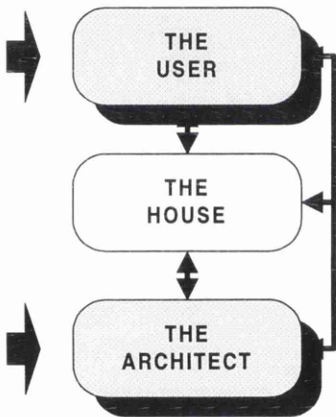


Figure 8.7 indicates that 64.7% of the sample architects chose a design concept that combines aspects of new and traditional architecture for their own houses. This could indicate that a large percentage of architects believe that traditional concepts of design do represent an alternative for today’s houses if modified in a way to satisfy the

requirements of today’s lifestyle. **Therefore, adaptability of traditional concepts to correspond to people’s changing way of living is required if these concepts are to be reintroduced as viable alternative design solutions.**



8. Section Two

The Design Process of Private Houses

8.3. SECTION TWO: THE DESIGN PROCESS OF PRIVATE HOUSES

The design process will be examined here as part of the building process, comprising three stages, namely those of design, construction and occupancy. The design activity is a complicated process through which an architect develops a conceptual solution to a design problem (Akin, 1986:28), (for more detailed discussion of the design process refer to *Chapter three*). Section two of chapter eight analyses the data of:

1. Part Four of the Architect Questionnaire, which investigates design of private houses as part of the architect's practice.
2. Part Six of the House User Questionnaire, The client as a participatory element in the design process of private houses, which examines the design process of sample houses of type C designed by architects, by detecting design, construction, and occupancy stages of these houses.

For more information about the house user questionnaire refer to Appendix no.1, and Appendix no. 2 for the architect questionnaire.

The main objective of this section however, is to investigate the extent of involvement of the architect as well as the user in the design and construction of private houses, and therefore to determine the extent of their contribution to the transformation of house design in Palestine.

8.3.1: PART FOUR of the Architect Questionnaire: Design of Private Houses

Historically, architects have been involved in translating clients' needs and desires into a design solution that is communicated to a contractor through drawings and specifications (Kirk, 1988:20). Part four of the Architect Questionnaire investigates the extent of involvement of the architect, as well as the user in the design of private houses in Palestine. It examines following issues:

1. Extent of client's influence on the architect's design decision.
2. Important spaces in houses design according to architects and users.
3. Aspects of concern to clients in house design.
4. New building materials

I. The extent of clients’ influence on the architect’s design decisions.

The sample architects were asked to determine the extent to which clients can affect their design decisions. The majority of architects (i.e. 94.1%) suggested that clients to some extent do affect their design decisions, especially those relating to the internal planning of the house. Additionally, 58.8% of the sample architects believed that clients can to some extent affect their design decision in connection with the outside appearance of the house.

The *Chi*- square test was carried out on the two variables to test the null hypothesis which assumes that no difference existed between the sample architects and the hypothesised model of architects in their estimate of the extent of client effect on their design decisions. The results revealed that significant differences existed between the two models of architects next to the client’s effect on the internal distribution of the house. *Chi*-square = 13.235, df=1, CV= 3.841 at level $p \leq 0.05$. Table 8.13 lists the results.

Table 8.13: *Chi*- square test on variables of the extent of client effect on the architect’s design decision.

DV	X ² <i>Chi</i> - Square	df	Asymp. Sig.	CV
1- On the internal distribution (layout)	13.235	1	0.000	3.841
2- On the external appearance	0.529	1	0.467	3.841

$p \geq 3.841$ df= 1. For significance X² must be ≥ 3.841 at level $p= 0.05$, df= 1 (Clegg, 1997: 175)

Therefore the null hypothesis is refuted for DV1 and confirmed for DV2. Thus, it could be concluded that client’s influence on the architect’s design decisions is only effective in relation to the internal distribution of rooms/ spaces.

Accordingly, it could be inferred that users could have contributed to a larger extent to the transformation of the internal planning of the Palestinian house, as opposed to change of the external appearance and form.

II. Important functions in private houses according to architects and clients (type C only).

Different functions of private houses were investigated, and architects were asked to specify the most important space (spaces) in the house to which they usually give

particular attention in design. Furthermore they were asked to determine the most important space (spaces) from the point of view of their clients.

Figure 8.8 is a graphical representation of the result. It compares observations of architects and clients according to the most important space in the house.

Figure 8.8: Observation distribution; no. of architects and clients by the most important space in house layout.

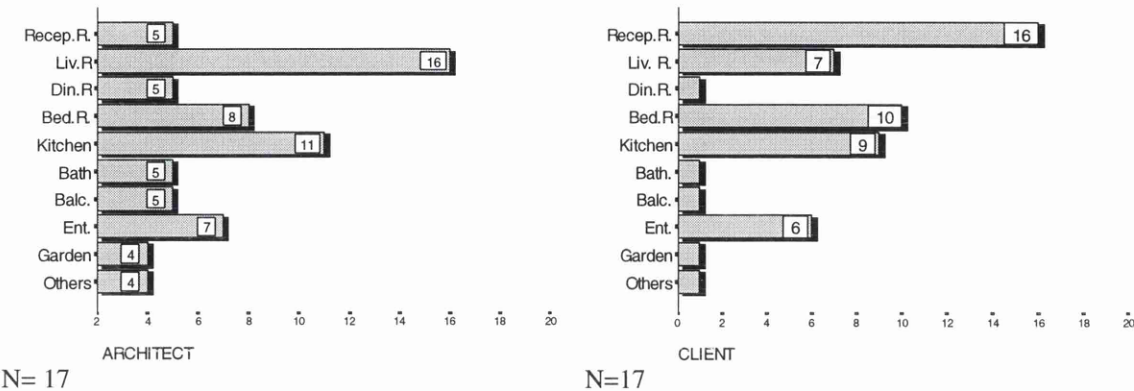


Figure 8.8 indicates that 16 out of 17 of clients (i.e. 94.1%) were in favour of focusing on the reception room in the design of their houses; hence for clients the reception room was deemed the most important space in the house. This result agrees to a large extent with previous findings of chapter six when the provision and the importance of the reception room was investigated.

The majority users of type C houses (new houses designed by architects) considered the provision of a reception room in their house a priority, and they also believed that it should be the most important room in their houses (*Chapter six*, 6.4.IV, V). **Therefore it could be concluded that users contributed in preserving the importance of the reception room within the layout of Palestinian houses.**

Alternatively, the living room was the most important space in the house according to the majority of architects among the sample surveyed (i.e. 94.1%). This result could point to the architect's contribution to change in house design in Palestine, as from the results of Part One of the house user questionnaire it was suggested that the living room acquired more importance among houses of type C (*Chapter five*, 5.2.1.). **Consequently, it could be concluded that architects gave more importance to the**

living space within the layout of the new Palestinian house. This was evident in the frequency and number of living rooms found among houses of type C.

According to clients, the most important space in the house after the reception room is the bedroom followed by the kitchen. While the kitchen is more important for the architect, it takes second place to the living room in importance. Table 8.14 ranks spaces by importance according to the architect and the client. Thus for the architect, the most important space is the living room, followed by the kitchen, bedroom, the entrance, then the reception room, dining room, bathrooms, and balconies within the same ranking, while gardens and other spaces assume least in importance. From the client’s point of view, as mentioned before, the reception room was deemed most important, followed by the bedrooms, kitchen, living room, the entrance, and finally all others functions .

Table 8.14: Classification according to importance of functions within house layout determined by architects and clients

Rank	Spaces according to Architect	Client
1	Living room	Reception room
2	Kitchen	Bed room
3	Bed room	Kitchen
4	Entrance	Living room
5	Reception room, Dining room, Bathrooms, Balconies	Entrance
6	Garden, others	All other functions

The importance both architects and users place on kitchens within the house layout could have contributed to a change in Palestinian house layout. In the past, traditional houses used to have an outside space for cooking, which was converted among houses of type B into an inside space. Kitchens of type B houses, proved to be small, as was indicated in chapter seven. However, kitchen size was increased among houses of type C and this was accredited to the architect, who could have contributed to a large extent in planning kitchens of new houses.

The results of this part of the architect questionnaire showed that both users and architects consider the kitchen as one of the important spaces in the house layout. **Accordingly it could be inferred that users and architects contributed to kitchens gaining importance within the layout of new houses. It could be that users**

encouraged architects to pay more attention to their kitchens, then the architect with his knowledge and experience accordingly planned the size and layout of kitchens to match his/ her clients' requirements.

It could be inferred from figure 8.8 that the architect generally gave more importance to all spaces and functions within the layout of the house than did the clients. Architects also contributed to allotting functions to different spaces within the house layout; this principle was not adopted among old houses. Therefore, since each space in the house has its special function, care would be taken by the architects when planning the area in order for it to function well for its intended purpose.

III. Aspects of concern for clients in private house design

Architects were also asked to determine some aspects which their clients focus on or demand in the design of their houses. These aspects concern mainly the layout and the external appearance of the house:

- The house layout: The house layout will be investigated in terms of the following aspects (variables):

- 1- Arrangement of rooms
- 2- Spaciousness of rooms (area)
- 3- Importance of the reception room
- 4- Privacy
 - a- Private circulation for the housewife
 - b- Separation between spaces used by visitors and those used by family members
 - c- Privacy for outdoor spaces and balconies
- 5- Orientation of rooms
- 6- Views
- 7- Economical solutions

-The exterior appearance of the house: The exterior appearance of the house will be investigated from the following aspects (variables):

- 1- Focus on major elevations, i.e. seen from the street
- 2- Focus on other facades of the house
- 3- Distinguished entrance
- 4- Expenditure to impress by decoration, materials, etc. (if possible)

a) The house layout

The house layout is investigated in terms of several variables (table 8.15). A *Chi*- square test was carried out to test the null hypothesis which assumes that no differences exist between observed and expected frequencies of the sample architects in their response to different variables used in this section. Table 8.15 lists the results.

Table 8.15: Chi- square test results on variables of house layout (part four of the architect questionnaire)

DVs	χ^2 <i>Chi</i> - Square	df	Asymp. Sig.	CV
1- Arrangement of rooms	0.529	1	0.467	3.841
2- Spaciousness of rooms	13.235	1	0.000	3.841
3- Importance of the reception room	9.941	1	0.002	3.841
4- Privacy	13.235	1	0.000	3.841
Private circulation for the housewife	13.235	1	0.000	3.841
Separation between spaces used by visitors and family members	13.235	1	0.00	3.841
Privacy for the outdoor spaces and balconies	4.765	1	0.029	3.841
5- Orientation of rooms	0.529	1	0.029	3.841
6- Views	13.235	1	0.000	3.841
7- Economical solutions	9.941	1	0.002	3.841

df= 1. χ^2 must be ≥ 3.841 to be significant at level $p= 0.05$, df= 1(Clegg, 1997: 175)

Result of the *Chi*-square test carried out on the seven variables revealed that significant differences existed between observed and expected (based on the null-hypothesis) frequencies of the sample architects in terms of all variables tested except for DV1 (arrangement of rooms), and DV5 (orientation of rooms). Accordingly, the null hypothesis is confirmed for these two variables and refuted for all others.

Table 8.16 lists the results reported by question 20 (part 4) of the Architect Questionnaire, the house layout. It indicates the count and percentage of observations reported. The result points out the large extent of user contribution in transformation of the Palestinian house layout. It proved that the large majority of clients focus on the spaciousness of rooms; this factor was suggested by 94.1% of architects among the sample surveyed, while it was revealed by the analysis of chapter six that improvement occurred in the house layout from older to new houses in terms of spaciousness. This was accredited to the architect intervention in designing houses of type C.

Table 8.16: Results of question 20 (part 4) of the Architect Questionnaire

	Yes		NO	
	Count	%	Count	%
1- Arrangement of rooms	10	58.8%	7	41.2%
2- Spaciousness of rooms	16	94.1%	1	5.9%
3- A reception room as the most important room in the house	15	88.2%	2	11.8%
4- Privacy	16	94.1%	1	5.9%
- Private circulation for the housewife	16	94.1%	1	5.9%
- Separation between spaces used by visitors and family members	16	94.1%	1	5.9%
- Privacy for the outdoor spaces and balconies	13	76.5%	4	23.5%
5- Orientation of rooms	10	58.8%	7	41.2%
6- Views	16	94.1%	1	5.9%
7- Economical solutions	15	88.2%	2	11.8%

Question no. 20: Do the majority of your clients focus on the following in the layout of their houses (answer by yes or no)

Combining the result of this section, (that users focus on the spaciousness of rooms in the layout of their houses), **it could be concluded that enhancement of spaciousness which was evident among type C houses was a result of the contribution made by both the architect and the user. The influence of the user is more on the internal distribution of the house and he/ she demands spacious rooms. Therefore it could be that architects, in order to satisfy the user, contributed to the improvement in design by increasing the spaciousness of rooms in type C houses.**

It was revealed that 88.2% of the sample architects believed that their clients required the reception room to be given special attention in terms of planning and decoration. This could support the previous results in which, according to clients the reception room was the most important space in the house.

The reception room and other spaces used by visitors were regarded as being especially important in old and new houses. Maintaining the special importance for these spaces could be due to user contribution as users still link the reception room with hospitality. **It could be inferred that users have maintained the importance of the reception room within the layout of the Palestinian house.**

Table 8.16 suggests that the large majority of architects i.e. 94.1% indicated that their clients focus on the privacy of their houses. This was obvious from the demand for private circulation for the housewife in the event of visitors in the house. This could be

an important aspect which points to a continuation of the traditional concept of house design in which separation between male and female sectors within the house was essential. Although separation in new houses is on a narrower scale compared to traditional houses; **this could be a result of users' contribution to keep the importance of privacy as a concept to respect in the design of their new houses.**

Users also demanded separation between spaces used by visitors and family members as well as privacy for outdoor spaces. Therefore privacy was an important or essential concept according to which traditional houses were planned. Although people are now less conscious of privacy than users of traditional houses, privacy is still an important issue in house design in Palestine.

Thus most if not all clients ask for a private entrance to the reception room or in larger houses which might have more than one space for visitors, the demand is for separation of circulation between spaces used by visitors and others used by family members.

Privacy is also requested by clients for their outdoor spaces, which is usually achieved by building a wall surrounding the house. The height of the wall differs according to the house situation relative to its surroundings.

The majority of architects (i.e. 94.1%) revealed that their clients ask for the optimisation of design and allow for good views for their houses. Additionally, economical design solutions (according to 88.2% of the architects) was an important issue for clients. The focus which clients may place on the views of their houses could draw attention to their contribution to change in the Palestinian house layout. As views are to a large extent associated with the extroverted concept of house design, users, by focusing on the outlooks of their houses, might be encouraging the adoption of the new extroverted concepts of house design.

Results of this part of the architect questionnaire (design of private houses) also point to the contribution of the architect in the transformation of the Palestinian house layout. However, as was revealed by the *Chi-square* test carried out earlier, the null hypothesis was confirmed for the variable orientation of rooms. Insignificant differences were

found between the sample architects and the hypothetical model in terms of this variable, which means that users do not focus that much on the room orientation of their houses during the design phase. It was indicated in chapter seven (the house condition) that the house environmental condition was improved among houses of type C designed by architects. Consequently, it could be concluded that their orientation was better than the other two types A and B. It could be inferred that the orientation of houses among type C may have improved their environmental conditions; more sunshine inside, better ventilation, and more lighting.

Thus the architect could have contributed to the improvement of the environmental conditions of type C houses by appropriate orientation of these houses. This could also be achieved with some influence of the user, as more than half the sample architects stressed that their clients focus on the room orientation of their houses.

Room arrangement among houses of type C was found to be improved compared to older houses of type A and B. However the results of this part revealed that insignificant differences were found between the sample architects and the hypothetical model in terms of the variable. Thus, it could be concluded that improvement in room arrangement among type C houses could be more accredited to the architect, who could therefore have contributed generally to the change of the Palestinian house layout regarding this factor.

b) The external house appearance

The external appearance of the house is investigated in terms of four variables. The sample architects were to determine whether their clients demand the following issues to be considered in the design of their houses or not: focus on elevations seen from the street, focus on other exterior facades of the house (unseen from the street), distinguished entrance, and expenditure to impress.

The null hypothesis assumes that no differences exist between the sample architects and a hypothesised model of architects in relation to the four variables. A *Chi-square* test was carried out on the variables and the results confirmed the null hypothesis for DV2 and DV3; insignificant differences were found between the sample architects and a

hypothesised theoretical model in terms of the two variables. On the other hand the null hypothesis was refuted for DV4 where significant differences were indicated, while the test could not be performed on DV1 as the variable is constant. Table 8.17 lists the results.

Table 8.17: Results of the Chi-square test on variables of the external appearance of the house

DVs		X^2 Chi-Square	df	Asymp. Sig.	CV
1	Focus on elevations seen from the street	Constant variable (yes)			
2	Focus on all the exterior facades of the house	0.529	1	0.467	3.841
3	Distinguished entrance	1.471	1	0.225	3.841
4	Expenditure to impress (if possible)	13.235	1	0.00	3.841

df= 1, X^2 must be ≥ 3.841 to be significant at level $p= 0.05$, df= 1 (Clegg, 1997: 175)

Therefore it could be concluded that clients' total focus is on elevations seen from the street, and they do not require that much focus from the architect on all the exterior facades of their houses. Also, the majority of clients do not focus on a distinguished entrance, and they do not require extra spending on their houses just to impress people. Table 8.18 lists the results reported by the sample architects; it indicates the count and percentage of observations.

Table 8.18: Observations distribution of variables of the exterior appearance of the house.

		Yes		No	
		Count	%	Count	%
1	Focus on elevations seen from the street	17	100%	0	0%
2	Focus on all the exterior facades of the house	7	41.2%	10	58.8%
3	Distinguished entrance	6	35.3%	11	64.7%
4	Expenditure to impress (if possible)	1	5.9%	16	94.1%

Results of tables 8.17, and 8.18 revealed that clients focus to a large extent on the house elevations seen from the street; this was suggested by 100% of the sample surveyed. However, little focus from clients was indicated on the exterior facades of the house as a whole or on a distinguished entrance.

Therefore it could be concluded that clients do not focus that much on the exterior appearance of their houses (all exterior facades), maybe because they leave the decisions concerning the house exterior to the architect. However, they do focus to a large extent on elevations seen from the street. This was also revealed by the findings of chapter six where it was found that users of type C houses care for the exterior image of their houses because of its association with their identity, and self expression (6.3.1.IV).

As indicated earlier, architects maintained that their design decisions concerning the external appearance of the house are not that much influenced by clients. **Therefore it could be inferred that change of the exterior appearance and form of the Palestinian house was largely the result of an architect contribution rather than a user one.**

While all of the sample architects without exception believed that their clients focus on the design of the external elevation seen from the street, only (35.3%) stressed that their clients ask for distinguished entrances. This could be one of the clients' or users' contribution to change in house design, as the entrance was an important element among houses of type A; traditional houses built inside the old city of Nablus according to an introverted design principle. Among these houses entrances were important elements within the anonymous street elevation, thus special care was dedicated to that element. Entrances of type A houses, however used to reflect the social status of the house owner. It was sometimes large or monumental (Robenson, 1982: 218) (Hakim, 1986: 96) (Petherbridge, 1978:197) (Briggs, 1974:147).

The design concept changed among type B and C houses, i.e. those representing the colonial and modern houses in Palestine. These houses are built according to the extroverted concept of house design. The prominence of the entrance as a principal element among type B houses was achieved by applying decorations and ornament. The importance of the entrance was expressed differently among type C houses, where the entrance becomes one component within the elevation of the house, which is designed by architects as one unit.

However the majority of architects found that conjuring up economical solutions was an important issue for their clients and that most of clients do not prefer spending money just to impress people. This could be a direct influence of the political and economic situation of Palestine.

IV. The new building materials

Part four of the Architect Questionnaire investigates the architect’s exposure to new building materials during his work. Examination aims to detect change in house design in terms of building materials. Results revealed that 76.5% of the sample architects were willing to introduce new materials in their construction work, while only 41.2% were in favour of introducing their own ways in dealing with new materials.

The *Chi*-square test was carried out on the two variables to test the null hypothesis that no differences existed between the sample architects and a hypothesised model in terms of the introduction and use of new building materials. Table 8.19 lists the results, which revealed that significant differences exist in relation to DV1, while an insignificant difference was found in relation to DV2. Therefore, the null hypothesis is refuted for the first variable and confirmed for the second.

Table 8.19: The *Chi*-square test on variables of the new building materials (part four of the architect questionnaire)

DVs	X ² <i>Chi</i> -Square	df	Asymp. Sig.	CV
1 Introduction of new materials	4.765	1	0.029	3.841
2 Introduction of own way of use	0.529	1	0.467	3.841

df= 1, X² must be ≥ 3.841 to be significant at level p= 0.05 , df= 1 (Clegg, 1997: 175)

It could be concluded that architects in Palestine usually introduce new materials in their work, but few of them are willing to introduce their own ways of use for these materials. New material, however, could be concrete, steel, different kinds of concrete blocks, materials used to cover concrete surfaces such as rough renderings or paint, as well as coloured aluminium, plastics ... etc.

Therefore it could be inferred that architects could have contributed to the change in Palestinian house design in terms of the introduction of new materials. On the other hand it should be mentioned here that the main building material in Palestine, which is lime stone, was and continues to be used in old and new houses. New materials introduced could be used in parallel with the use of stone and not as a replacement.

8.3.2. PART SIX of the House User Questionnaire: The client as a participatory element in the design process of private houses (Type C only)

Part six of the House User Questionnaire investigates issues related to the building process of private houses (type C) during different stages of design, construction and occupancy. It aims to detect the following:

- 1- The extent of the architect's involvement in the design and construction of private houses.
- 2- The extent of effect the client may have on the architect's design decisions.
- 3- The extent of the client involvement in the construction of private houses.
- 4- The client's satisfaction with the architect's work and overall performance.

Part Six of the House User Questionnaire is concerned only with **users among type C** houses who are owners and whose houses were **designed by architects, i.e. 49 out of 57 (86% of the sample houses), 100% of owned houses**. The main objective of this part is to investigate the extent of contribution of the architect as well as the user (the client) to the transformation of the Palestinian house design. Several variables were chosen, as a result of discussions with practising architects, to test issues related to the building process of private houses in different stages:

a- **The design stage** is investigated in terms of the following variables:

- 1- Making changes during the design stage.
- 2- Spending enough time with client during the design stage.
- 3- Deciding on the external appearance of the house.
- 4- Planning the interior of the house.

b- **The construction stage** is examined by the following variables:

- 1- Design modification during construction.
- 2- Choice of building materials.
- 3- Responsibility for supervision.
- 4- Cost of implementation of the architect's ideas and suggestions.

c- **The occupancy stage** is investigated by the following variables:

- 1- Efficient use of space inside the house.
- 2- Overall satisfaction with the architect's work.

The null hypothesis assumes no differences exist between the observed and the expected frequencies of architects' attitude in relation to different variables. In other words, there is no differences in attitude between the sample architects and a hypothesised theoretical model of architects regarding the variables. To test the null hypothesis, the *Chi*-square

test is carried out on the ten variables of Part Six (the client as a participatory element in the design process of private houses); the results are listed in table 8.20.

Table 8.20: Results of the *Chi*-square test on variables of part six of the house user questionnaire (the client as a participatory element in the design process of private houses)

DV _s		X^2 <i>Chi</i> -square	df	Asymp. Sig.	CV
1-	Making changes during design stage	18.351	4	0.001	9.488
2-	Spending enough time with client	14.667	4	0.005	9.488
3-	The external appearance of the house	27.825	4	0.000	9.488
4-	The internal planning of the house	17.224	4	0.002	9.488
5-	Modifications during construction stage	20.807	4	0.000	9.488
6-	Choice of building materials	22.035	4	0.000	9.488
7-	Supervision during construction stage	11.158	4	0.025	9.488
8-	Cost of implementation of the architect's ideas	3.965	4	0.411	9.488
9-	Efficient use of interior space	20.632	4	0.000	9.488
10-	Satisfaction with the architect's work	27.633	4	0.000	9.488

df= 4. For significance X^2 must be ≥ 9.488 at level $p= 0.05$, df= 4 (Clegg, 1997: 175)

The test yielded significant differences between the observed and expected frequencies in relation to all variables tested except for DV8; $X^2 = 3.965$, df=4, CV= 9.488 at level $p=0.05$. Alternatively, the *Chi*-square value exceeded the critical value of 9.488 at level $p= 0.05$, df=4 (Clegg, 1997: 175) for DV1, DV2, DV3, DV4, DV5, DV6, DV7, DV9, and DV10. Therefore the null hypothesis (the hypothesis of no association) is refuted for all variables tested except for **DV8**, the null hypothesis is confirmed for DV8 only, which tests the implementation cost of the architect's ideas and suggestions.

Accordingly, it could be concluded that sample users of owned houses of type C had different attitudes from a theoretical model of users towards the following variables during design, construction, and occupancy stages of their houses:

1. During the design stage; different attitudes were indicated towards: the architect's willingness to make design changes, spending enough time with client, deciding on the external appearance of the house, and planning of the house interior.
2. During the construction stage; different attitudes were indicated towards: modifications of original designs, choice of building material, and responsibility for supervision during construction stage.

3. During the occupancy stage; different attitudes were found between users towards efficient space utilisation of the house, and the client satisfaction with the architect's work.

Similarities in attitudes were suggested between users in relation to the implementation cost of the architect's suggestions during the construction stage.

For further investigation, each of the ten variables is discussed in the light of the results yielded by the *Chi-square* test carried out earlier.

I. Design stage of private houses

The design stage examines the extent of contribution of both architects and clients in the design of private houses in Palestine. Four variables are used for investigation:

a) Making changes during the design stage

Statement: The architect was easily convinced to make changes on the house layout during the design stage .

This variable investigates the architect's willingness to make changes to the private house layout during the design stage. It examines whether the user thinks that the architect was easily convinced to make design changes according to his/ her wishes. In other words the variable tests the relationship and collaboration between the architect and his/ her clients.

Ackerman (1969) suggested that architects in their contact with clients adopt one of two traditional positions: the pragmatic, or the egoist. The first is interested in giving clients what they want, while the second in giving them what he/ she wants. He argues that the pragmatic designs are usually conservative or fashionable, while the egoist is the form-giver " he and his client silently agree that that a building is an isolated work of art, an inhabitable sculpture, in which the most significant ingredient is the flavour of the designer's characteristic style" (Quoted in Mitchel, 1974: 17).

Eventually, the variable aims to detect the extent of the client's involvement in house design, thus the extent of users' contribution to transformation of house design in

Palestine. The *Chi*- square test carried out earlier yielded significant differences between the sample users and a hypothetical model of users in terms of the variable ($X^2= 18.351$, $df=4$, $CV= 9.488$, $p=0.05$). Therefore it could be concluded that architects, as designers of type C sample houses, were influenced by users in making changes during the design stages of these houses.

The architect as the designer of new houses was in most of the cases surveyed easily convinced to make changes on the house design in line with his client's requests. Accordingly, it could be concluded that architects in Palestine, to some extent adopt the pragmatic approach to designs (Ackerman, 1969). Thus they tend to share control in house design with clients. Hence, architects as well as clients could have contributed to a large extent to the change in Palestinian house layout.

b) Spending enough time with client during design stage

Statement: The architect spent enough time to understand our requirements during the design stage.

This variable examines whether clients think that the architect spent adequate time to understand fully their requirements during the design stage. Investigation aims along with the previous variable to detect communication between architects and clients during the design process of private houses. This might lead to the unveiling of issues related to the extent of contribution of architects and users to the transformation of house design in Palestine.

The *Chi*- square test carried out earlier yielded significant differences between the sample users and a hypothesised model of users in terms of the variable ($X^2= 14.667$, $df=4$, $CV= 9.488$, $p=0.05$). It was concluded that architects in Palestine do spend enough time with their clients to understand their design requirements.

Thus it could be concluded that among most of cases surveyed, architects were keen to understand the design requests of their clients and were willing to spend enough time with their clients to understand their requirements during the design stage. Therefore, it could be inferred that users could have an impact on the house design through the

influence they might have on the architect's design decisions during the design stage of private houses.

To further investigate if clients requirements was satisfied by their architects, clients satisfaction with the architect's work will be tested later.

c) The external appearance of the house

Statement: The architect had total freedom to decide on the external appearance of our house.

Decisions concerning the external appearance of the house were investigated. The main objective is to examine the extent of contribution of architects and users to change of the external design of the Palestinian house.

The *Chi*-square test was carried out on the variable and significant differences were found between the sample users and a hypothesised model/ sample of users in terms of giving the architect the total freedom to decide on the external appearance of their houses ($X^2= 27.825$, $df=4$, $CV= 9.488$, $p=0.05$). As the null hypothesis is rejected, this implies that users in most of the cases left the decisions concerning the external appearance of their houses to the architect.

The result indicates that most clients did not exert influence on decisions concerning the external appearance of their houses. Thus, it could be concluded that architects in Palestine tend to have control on the exterior appearance of private houses. Therefore, it could be inferred that architects contributed to a large extent to the transformation of the exterior design of the Palestinian house.

d) The internal planning of the house

Statement: We played an important role in planning the interior of our house

This variable investigates the extent of clients' involvement in planning the internal distribution of their houses (layout). The main aim is to examine the extent of contribution of the architect and the client (user) to the transformation of the Palestinian house layout. The *Chi*- square test carried out earlier yielded significant differences between the sample users and a hypothesised model of users in the extent of their contribution to the planning of their own houses ($X^2= 17.224$, $df=4$, $CV= 9.488$, $p=0.05$).

Therefore it could be concluded that users influenced the internal distribution of private houses in Palestine, hence they could have contributed to its transformation. This was also suggested by the majority of architects as it was indicated earlier in this chapter; clients to a large extent influence the architect's design decisions in relation to the interior distribution of private houses.

One could infer that during the design stage of private houses in Palestine, architects usually do their best to understand their clients' requirements; they maintain good communications and share decision making with them. All this may apply when designing the functional layout of the house, while its external design is usually left to the architect. It was found that most clients were concerned with decisions related to the layout of the house. The architect and the client were to decide jointly on this, while the external design of the house is designated solely to the architect.

Therefore it could be concluded that users influence the house design to an extent in Palestine in terms of functional relationships and internal distributions, while architects to a large extent influenced the exterior appearance and form of the Palestinian house.

II. Construction stage of private houses

Construction stage of the private house is investigated in terms of design modifications during construction, choice of building materials, supervision during construction, and implementation cost of the architect's suggestions and ideas.

a) Design modification during construction

Statement: The architect's design was implemented without modifications during construction.

Modification of the architect's design during construction was investigated in order to detect the extent of the architect's involvement in the construction of private houses in Palestine and thus the extent of the architect's control over the exact implementation of his/ her designs during execution. The *Chi-square* test carried out on the variable earlier yielded significant differences between the sample users and a hypothesised model in terms of the variable ($X^2 = 20.807$, $df=4$, $CV = 9.488$, $p=0.05$). The result suggested that

most houses among the sample had their designs implemented according to the architect's original design.

This could suggest that the architect in Palestine could have influenced house design, as results showed that architects do exercise control over the exact implementation of their work during construction.

b) Choice of building materials

Statement: The architect chose all of the building materials used in our house.

Choice of building materials is examined as one of a series of decisions that have to be made during the building process of private houses. The main objective is to investigate the extent of the architect's involvement in the design and construction of private houses. The *Chi-square* test carried out earlier yielded significant differences between the sample users and a hypothesised model of users in terms of the choice of building materials used in their houses and whether they had been chosen by the architect or not ($X^2 = 22.035$, $df=4$, $CV= 9.488$, $p=0.05$). However the result could imply that clients do not share with architects the choice of building materials for their houses.

It could be concluded that architects could have contributed to the change of building materials used in the construction of houses in Palestine and not the user (client). However as was found in chapter five (5.2.2.I) the main building material in Palestine is lime stone. It was the traditional building material and has continued to be used until the present. Therefore new building materials could be introduced for use but always along with the basic building material; lime stone.

c) Supervising construction stages

Statement: The architect was responsible for supervision during construction.

The main objective behind investigating this variable is to detect the extent of the architect's involvement in the construction of private houses in Palestine. Supervision during construction could be important to a large extent for the architect in order to guarantee the exact implementation of his designs. However the result of the *Chi-square*

test yielded significant differences between the sample users and a hypothesised model of users in terms of the variable ($X^2= 11.158$, $df=4$, $CV= 9.488$, $p=0.05$). Thus it was suggested that in most of the cases surveyed, architects were responsible for supervision during construction stages.

Accordingly it could be concluded that most of private houses in Palestine are supervised during construction by the architect. This could be an important aspect in guaranteeing the exact implementation of the architect's design, and it could also point to a large extent of possible contribution which the architect could have had in the transformation of the Palestinian house design.

d) Implementation Cost of the architect's suggestions and ideas

Statement : Most of the architect's ideas and suggestions were reasonable in cost.

The construction stage is investigated in terms of the execution cost of some of the architect's suggestions. Investigation aims at detecting what clients feel about the cost of implementation of some of the architect's ideas.; do they think that they were reasonable or costly suggestions?

The *Chi-square* test carried out on the variable yielded insignificant differences between the sample users and a hypothesised model of users in terms of the variable ($X^2= 3.965$, $df=4$, $CV= 9.488$, $p\leq 0.05$). Accordingly it was found that the majority of users believe that most of the architect's design ideas and suggestions were not reasonable in cost. It could be concluded that in terms of cost most clients think that they paid extra money unnecessarily for the execution of some ideas of the architect.

This might not be a particular case of Palestine, but as it was indicated earlier in this chapter, clients most of the time ask for economical solutions. Maybe, the poor economical situation of Palestine have an impact on the population.

It could be concluded that during the construction stage of private houses, architects in Palestine tend to have control over their designs and are usually responsible for supervision during construction stage. However users could exert an influence during

the construction stage of their houses through decisions related to the cost of execution of some details.

For further investigation of the design and the construction stage, and to find out if any interrelationship existed between variables, Spearman correlation test was carried out on the eight variables discussed. A significant correlation was detected between a few variables; the result is listed in table 8.21.

Table 8.21 : Results of Spearman correlation test on some variables of part six of the house user questionnaire (the client as a participatory element in the design process of private houses)

IVs by DVS	Spearman's rho Test				
	N	rho	AP	CV	P
- Modification during construction by supervising construction stage by the architect.	49	-0.352	0.013	0.281	0.05
- Building materials chosen by the architect by supervising construction stage by the architect.	49	0.318	0.026	0.281	0.05
- Users playing significant role in planning the interior of the house by design modification during construction.	49	-0.419	0.003	0.364	0.01
- Users playing significant role in planning the interior of the house by supervision during construction stages by the architect	49	0.385	0.007	0.364	0.01

N= 49, $r \geq 0.281$ at level $p= 0.05$, 0.364 at level $p= 0.01$ (Mark, 1996: 381)

A Spearman correlation test was carried out on the two variables; modifications during construction stage and the supervision of construction by the architect. The result revealed a weak negative correlation between the two variables, (significant at level $p \leq 0.05$). Therefore it could be concluded that most of the houses that had undergone modifications on their design during construction were not supervised by architects. So it could be inferred that the architect's design is likely to be altered during construction stage by users, civil engineers or contractors if the supervision was not the architect's responsibility.

Correlation was also investigated between the choice of building materials by the architect and supervising construction stages by the architect. Results are listed in table 8.22. The result revealed a positive correlation between the two variables which can indicate that in most of the cases when the architect is responsible for supervision during construction, he/ she will also be responsible for the choice of building materials.

The result also suggests a strong negative correlation between significant role played by users in planning the interior of their houses and design modification during

construction. So, it could be concluded that users who had contributed significantly to the planning of their houses did not have to modify their house design during construction.

A significant correlation was found between significant role played by users in planning their house and the architect responsible for supervision during construction. Therefore, **it could be concluded that most users who had a vital role in planning the interior of their houses, also had the architect to supervise the construction of their houses.**

It could be inferred that the user contribution in planning the layout of his/ her house contributed to fewer modifications during execution. Also co-operation between the architect and the client is important during the design stage and this could be carried through to the construction stage too.

III. Occupancy stage of private houses

The occupancy stage investigates the house design after use. Users of new houses of type C were required to evaluate the architect's work after they have used the house for more than three years. This stage is examined in terms of the architect's success in utilising space, and the user's overall satisfaction with the architect's work.

a) Space utilisation of the house

Statement: The architect succeeded in utilising the space inside our house.

The sample users were investigated in terms of space utilisation inside their houses, and whether they think that the architect succeeded in making use of the interior space of their houses or not. The *Chi-square* test carried out earlier revealed that significant differences existed between the sample users and a hypothesised model in relation to the variable. Therefore, it could be concluded that in most of the cases surveyed, the architect succeeded in utilising the space inside the house and this could suggest that the architect could to a large extent have influenced design of private houses in Palestine through his/ her attempts to make better use of spaces within the house layout.

b) Clients’ overall satisfaction with the architect’s work

Statement : How would you sum up your feelings about the architect’s design of your house

This variable investigates the degree of satisfaction of clients with the architect’s design after occupancy. The *Chi*- square test carried out earlier revealed significant differences between the sample users and a hypothesised model of users in terms of the variable. Therefore it could be concluded that most users were satisfied with the architect’s design for their houses.

IV. Correlation between variables and the user overall satisfaction

The Spearman’s correlation test was carried out on all variables used in the part six by the IV user overall satisfaction; significant correlations were found with the IV and the DVs: space utilisation, enough time spent by the architect during the design stage, and the choice of building materials. The results are listed in table 8.22.

Table 8.22: Significant correlation result of the Spearman’s test between variables of part six of the house user questionnaire and the IV user overall satisfaction.

IVs by DVS	Spearman’s rho Test				
	N	rho	AP	CV	P
- User overall satisfaction with the architect’s work by space utilisation.	49	0.439	0.002	0.364	0.01
- Use overall satisfaction with the architect’s work by enough time spent by the architect during design stage.	49	0.445	0.001	0.364	0.01
- User overall satisfaction with the architect’s work by choice of building materials.	49	0.308	0.031	0.281	0.05

N= 49, $r \geq 0.281$ at level $p= 0.05$, 0.364 at level $p= 0.01$ (Mark, 1996: 381)

Results indicate that some aspects of the building process influence the user overall satisfaction more than others. These factors correlated positively at different levels with user overall satisfaction with the architect’s work. A significant correlation was found between the IV user overall satisfaction and space utilisation in the house: (N=49, rho= 0.439, CV= 0.364, at level $p= 0.01$). It could be concluded that the efficient use of space is an aspect that can cause satisfaction among users.

A significant correlation was also found between the IV; user overall satisfaction and enough time spent by the architect during the design stage (N=49, rho= 0.445, CV= 0.364, $p=0.05$). It could be concluded that spending enough time with client during the design stage is another factor that contributes to the user satisfaction with the architect’s

design. Also the IV correlated significantly with the choice of the building materials ($N=49$, $\rho=0.308$, $CV=0.281$, $p=0.01$). It could be concluded that users who left the choice of building materials to the architect are more likely to be satisfied with the architect's work.

The overall result points to an extent of contribution from both the user and the architect to change in house design in Palestine, with more influence coming from the architect. Also it was suggested that users could manifest their influence through sharing some of the architect's design decisions during the design stage. Results stressed the importance of user's participation in this stage, as an essential factor in generating satisfaction among users.

8.4. CONCLUSIONS

This chapter comprised two sections; the first dealt with issues related to the Palestinian architect while the second investigated the design process of private houses. The main objective however is to comprehend the extent of involvement of both architects and users in the design and construction of private houses in Palestine. Eventually conclusions will be made to detect the extent of their contribution to the transformation of the Palestinian house design.

Some issues related to the potential role the architect could have played in instigating change in the traditional concepts of house design in Palestine are as follows:

1. The majority of Palestinian architects are familiar with the traditional concepts of house design and this familiarity could to some extent affect their designs.
2. The actual implementation of traditional concepts of house design is fraught with difficulties, such as economical, social, technical, and others related to planning and regulations.
3. Length of experience, as well as the educational background of practising architects proved to have no influence on the architect's attitude towards traditional and new architecture.

4. Investigation yielded that a large percentage of architects (64.7%) believed that adaptability of traditional concepts to correspond with people's changing lifestyle is required if these concepts are to be reintroduced as an alternative design solution.

In fact, this chapter brought forward some interesting aspects related to transformation of the Palestinian house in terms of:

- Change of the **layout** or the internal distribution of the house.
- Change of the **external design** of the house.

Therefore, it was found that the effect of users (clients) on the architect's design decisions, could be more influential on the internal distribution of functions within the house layout, than on the external design of the house.

Transformation of the Palestinian house layout

Contribution of users to change of the Palestinian house layout could be twofold; users could have contributed to sustain some and abandon other aspects (design elements, functions, or characteristics) of the Palestinian house.

The following aspects could have been sustained within the layout of Palestinian houses due to users contribution.

- a- Respect of privacy within the house layout, and in relation to the surroundings.
Therefore within the layout of the house, separation is required between spaces used by visitors and those used by family members, also private circulation for the housewife is to be assured, while privacy from the outside relative to passers-by and surrounding houses is also demanded in new houses.
- b- The importance and location of the reception room. The reception room maintained its position as the most important space in the house; it also preserved its location within the house layout. Again for privacy considerations reception rooms were and still are situated near the main entrance of Palestinian houses.

The client's or user's influence could be linked to social aspects, for instance privacy and hospitality are two important social concepts in Palestinian society. Therefore users demand privacy for the interior of their houses when visitors are admitted to the house.

In contrast, users could have contributed to change of the Palestinian house layout by:

1. Encouraging the adoption of the extroverted concept of house plan. Results of chapter eight indicated that the majority of clients require the orientation of their houses towards good views. The demand for views among users could be interpreted as that the concept of introverted courtyard house is not acceptable by clients.
2. Demanding an increase of room spaciousness; a large majority of architects stressed that their clients focus on the spaciousness of rooms in their houses. Therefore this could have generated change or enhancement of spaciousness of rooms among new houses of type C. This was also evident from the results of chapter six.

On the other hand, the architect contribution to the transformation of the Palestinian house layout could be summarised by the following:

1. Allotting special functions to spaces within the layout of the Palestinian house; traditionally spaces within the house did not have specific functions. Rooms were multi-functional, i.e. used for more than one function without specifications.
2. Creating special importance for the living space within the layout of the Palestinian house. This was evident from the increase in the percentage of new houses which accommodate living rooms; more than one living room was found among some of these houses.

In contrast, both the architect and the user contributed in changing some aspects of the Palestinian house. This was evident in:

1. Improvement on the kitchen as a work space within the house layout. Results of chapter eight indicate that clients and architects are concerned about the design of kitchens. Obviously architects with their experience could have contributed to a larger extent to the improvement of kitchen planning among new houses.
2. Improvement in the room arrangement. According to the results of chapter eight more than half the sample architects think that their clients focus on the room arrangement of their houses. Therefore focus from the client side combined with concern and experience from the architect side could have contributed to

enhancement of room arrangement among new houses. This could have been achieved by feasible functional relationships, and reduction of wasted space.

3. Enhancement of room orientation. Results of part four of the architect questionnaire revealed that more than half of the sample architects think that their clients focus on the room orientation in their houses. Thus, the concern of clients incorporated with the architect's experience could have contributed to the improvement of room orientation among new houses. However this could have contributed to improvement in the environmental condition of new houses (*Chapter 7*).

Transformation of the Palestinian house external design:

As was concluded earlier, contribution of users to change of the exterior appearance of the Palestinian house is very limited or negligible. Results of chapter eight proved that the influence of clients on the architects' decisions concerning the external appearance of private houses is too little. Also results suggested that clients leave architect total freedom to decide on the external appearance of their houses. Therefore it was concluded that architects contributed to a large extent to the transformation of the external appearance and form of the Palestinian house. This could be indicated by:

1. Focus on the exterior facades of the house. Clients, however were proved to focus only on elevations seen from the street, while architects are to deal with all four elevations of the house.
2. Introduction of new building materials.
3. Work within constraints of economical solutions. According to sample architects most clients demand economical solutions, and most of them would not over spend money to impress.

Client influence, although not considered, might also be effective through restricting the cost of construction, and stressing the importance of street elevations

Chapter eight also examined the extent of involvement of both architects and users in the design, and construction of private houses in Palestine. Data analysis revealed some

aspects related to their contribution to the transformation of the Palestinian houses. It was indicated that clients involvement could be through the following:

1. Their ability to clarify and define their requirements and needs of their house during the design stage. Results have suggested that architects allow adequate time for clients in Palestine during the design stage of private houses.
2. Giving suggestions for planning the interiors of their houses during the design stage. Results have proved that clients can have an effect on the architect's decisions concerning the space arrangement within the layout of the house.
3. Putting some restraint on construction cost. However results have revealed that economical aspects are to be considered in the design of Palestinian houses

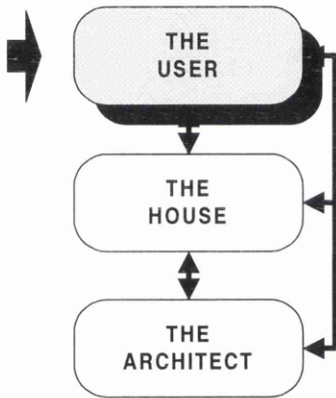
The architect's involvement during the design and construction of private houses is indicated by the following:

1. Operating changes on his/her design according to the client's wishes during the design stage of private houses. Results have revealed that architects in Palestine to some extent agree to make many changes on their designs.
2. Spending enough time with his/ her client to understand their requirements during the design stage.
3. Having full control on the external appearance and form of the private house. Results have suggested that clients give architects a free rein to decide on the exterior appearance of their houses.
4. Choosing the building materials for construction of the house.
5. Supervising construction stages of houses he/ she designs, and therefore monitoring the execution of his/ her work.
6. Utilising space within private houses. Results have revealed that a large percentage of users believe that the architect succeeded in utilising the space of their houses.
7. Success in generating satisfaction among users of his designs after occupancy.

8.5. REFERENCES

- AKIN, O. (1986): *Psychology of Architectural Design*, Pion Limited, London (Ch. 1, 3, 4).
- BRIGGS, M. (1974): *Mohammadan Architecture in Egypt and Palestine*, Oxford University Press, London.
- CASWELL, F. (1995): *Success in Statistics*, third edition, John Murray publishers, London, pp.136-147.
- CEJKA, J (1982): "Regional Tradition and its Application in Contemporary Architecture", *The Jordanian Engineer*, Amman, No. 27, pp.90-100.
- CHADIRJI, R (1986): " Architectural Education in Iraq: A Case Study", in A. Evin (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, 1986, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.112.
- CLARK, R.H., PAUSE, M.(1985): *Precedent in architecture*, Van Nostrand Reinhold Company Inc. New York, p.5.
- CLEGG, F. (1997): *Simple Statistics, A course Book for the Social Sciences*, Cambridge University press, United Kingdom, Unit 8, 12, 15.
- EGELIUS, M.(1980): Housing and Human Needs: the work of Ralph Erskine, in Mikellides (ed.), *Architecture for People*, pp.135-148, Macmillan Publishing co., New York.
- FRUDE, N.(1993): *A Guide to SPSS/PC+* Second edition, The Macmillan Press Ltd., London.
- GEORGE, D.& MALLERY, P.(1995): *SPSS/PC+ Step by step: a simple guide and reference*, Wadsworth Publishing Company, Belmont. Ch. 6, 8,11,30.
- GUTMAN, R. & WESTERGAARD, B.(1974): "Building Evaluation, User Satisfaction, and Design", in Lang, J. (ed.), *Designing for Human Behaviour: Architecture and the Behavioural Sciences*, Dowden Hutchinson & Ross, Inc., Pennsylvania. pp. 320-329.
- HAKIM. B.S.(1986): *Arabic- Islamic Cities: Building and Planning Principles*, KPI Limited, London, Routledge & Kegan Paul plc, London and New York.
- HUET, B. (1983): " The Modernity in a Tradition- The Arab Muslim Culture of North Africa", *Mimar*, No.19, October- December, pp.49.
- KOSTOF, S.(1992): *The city assembled*, Thames and Hudson, London, pp.198.
- MACRAE, S.(1994): *Drawing Inferences from statistical Data*, The British Psychological Society, UK, Ch. 2,7.
- MARK, R. (1996): *Research Made Simple: A Handbook for Social Workers*, SAGE Publications, Thousand Oaks, London, New Delhi, pp.381.
- MITCHEL, H. E.(1974): " Professional and Client: An Emerging Collaborative Relationship", in J. Lang (ed.), *Designing for Human Behavior: Architecture and the Behavioral Sciences*, Dowden Hutchinson & Ross, Inc., Pennsylvania. pp. 15-22.
- NACHMIAS, D.& NACHMIAS, C. (1976): *Research Methods in the Social Sciences*, Edward Arnold, London, pp. 109-117, 286-295.
- NORUSIS, M. J.(1986): *The SPSS Guide to Data Analysis*, SPSS Inc., USA.

- PETHERBRIDGE, G. T. (1978):” Vernacular Architecture: The House and the Society”, in Mitchel, *Architecture of the Islamic World*, Thames and Hudson, London
- QAMHIEH, K.(1992): *Saving the Old Town of Nablus, A Conservation Study*, Unpublished Ph.D. Thesis, Mackintosh school of architecture, University of Glasgow, Ch.5.
- ROBINSON,F. (1982): *An Atlas of the Islamic World Since 1500*, Phadon, Oxford, England, pp.218.
- ROGERS, M.E.(1989): *Domestic Life in Palestine*, Kegan Paul International, London, New York, pp.262.
- SPSS Base 7.0 Application Guide (1996), SPSS Inc.
- WEISS, N.A. (1995): *Introductory Statistics*, Fourth edition, Addison - Wesley Publishing Company, Inc., New York, England, Paris.



9. Chapter Nine

User Preference of Old and New Architecture

The Analysis of Part Four of the House
User Questionnaire

9.1. INTRODUCTION

Chapter nine details the data analysis and the findings of Part Four of the House User Questionnaire, which examines users' preference for old or new houses in Palestine. It was hypothesised that users could have induced change in house design (proposition one), and it was assumed that their preference for new houses might be one of the factors that could have stimulated the abandonment of traditional concepts of house design and the endorsement of new ones (for more information about the research methodology design refer to *Chapter 4*).

The main objective of this chapter is to find out whether users' preference in general is for old or new houses and to discover the likely reasons behind this. The results could shed some light on the extent of users' contribution to the transformation of Palestinian house design. part four of the house user questionnaire comprises the following:

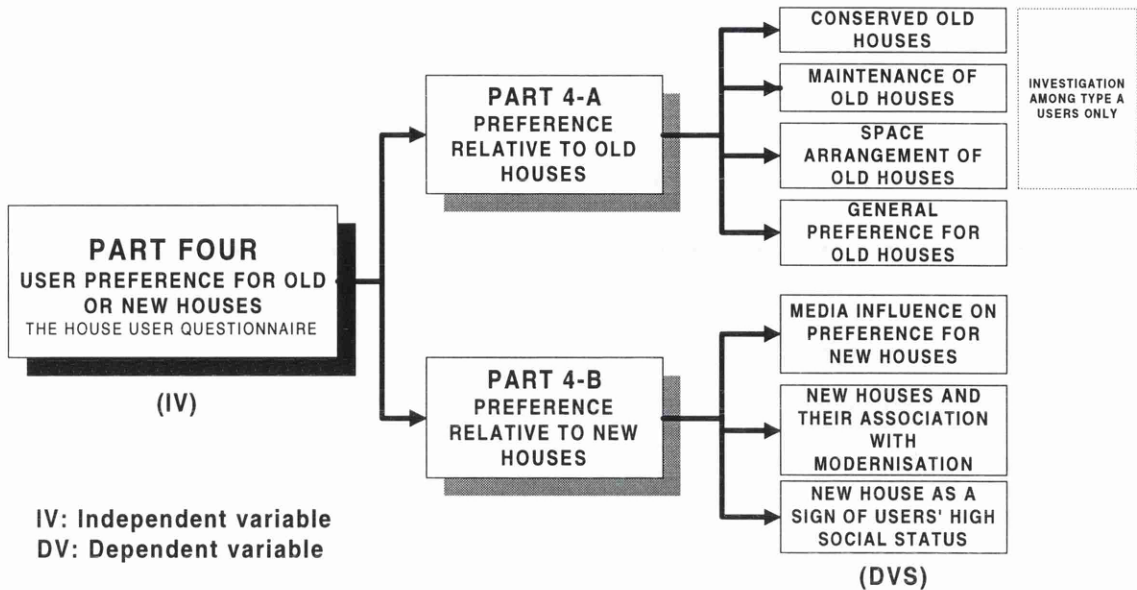
PART 4(A) investigates users' attitudes towards and preference of old houses, and examines the potential reasons behind users' preference not to live in these buildings. Four variables are being used for investigation: conserved old houses, general preference for old houses, maintenance, and space arrangement of old houses.

PART 4(B) investigates users' preference for new houses, and explores the likely reasons behind this. Three variables are being used for detection: media influence on users' preference, modernity and its association with new houses, as well as new houses as a sign of high social status.

Finally, the sample users' past residential experience (part five of the house user questionnaire) is examined and linked with their preferences.

The structure of Part Four is indicated by figure 9.1. The figure shows the subdivisions of the parts: **4(A)**, **4(B)**, and the different variables.

Figure 9.1: Structure of chapter nine showing he two parts 4A, 4B and the variables



9.2. PART FOUR OF THE HOUSE USER QUESTIONNAIRE: USERS' PREFERENCE FOR OLD OR NEW HOUSES

Three variables of **part 4(A)** were investigated among users of type A houses only (figure 9.1) while the fourth variable of the same part (general preference for old houses) and the three variables of **part 4(B)** were all conducted on the sample users within the three groups of houses identified earlier: Type A symbolises the traditional Palestinian courtyard house, type B represents the colonial house (covered central-hall), and type C denotes the new house in Palestine. The main objective of part four of the house user questionnaire is to detect users' preferences and reveal some potential reasons behind preference for old or new houses.

Two nonparametric tests for k independent sample, the Kruskal Wallis and the Median tests, were carried out on only four of the variables used in this chapter. The objectives was to examine variation in preference between users of the three groups, and to test the null hypothesis which assumes that no differences exist between groups in their preference for old or new houses. For more information about the Kruskal Wallis and the Median test refer to *Chapter six*, paragraph 6.2.2.

For each of the four variables, tested with the three house types, detailed investigations were conducted in terms of observations distribution within and between groups.

Graphical representation of bar charts indicated percentage of observations distribution for each group and means of observations of the three groups. In addition, boxplot diagrams compared the three groups in terms of observations distribution, median, and spread. For the first three variables of part 4(A) observations' distribution within the group will be examined.

The Likert scale (arbitrary scale) of five levels was adopted to measure users' preference; the scale runs from Strongly agree = 5 to Strongly disagree = 1.

9.2.1. PART 4 (A): User Preference Relative to Old Houses

This part examines users' preferences for, as well as their attitudes towards, old houses in Palestine of type A (the traditional courtyard house). Investigation will be carried out among users of type A houses only, regarding the first three variables, while the three groups of users (A, B, and C) will be investigated in relation to the fourth variable i.e. general preference for old houses. Examination will reveal some of the possible reasons behind preference for living in an old house and the conditions under which people are willing to live in such houses. Four variables are to be tested in this part:

1. Conserved old houses
2. Maintenance of old houses
3. Space arrangements of old house
4. General preference for old houses

The four variables of part 4(A) are to be investigated in more detail next.

I. Conserved old houses

The main aim behind the investigation of the variable is to find out whether conservation, and improvement in the physical condition of the traditional old houses of Nablus (**type A**), would make them more attractive to users and consequently affect their preference. Table 9.1 summarised the results of observations distribution among users of type A houses in response to the statement which examines user's preference to conserved old houses.

It is obvious from table 9.1 that 60% of users among type A houses agree with the statement compared to 24% who disagree. This could suggest that users of old houses

inside the old city of Nablus would prefer living in conserved houses. Thus it could be the bad physical condition of the old city's houses that caused a low level of user satisfaction with these houses (type A) compared to users of other types of houses (B and C) (6.3.3).

Table 9.1: Observation distribution of DV1 of part 4(A) of the house user questionnaire among type A group

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
23%	37%	16%	19%	5%

Statement : I would prefer to live in a conserved old house

It could be concluded, according to results drawn from this variable, that type A users would like to live in the old city of Nablus, particularly if the physical condition of houses there was improved. This could be due to their preference for the social life of the old city, where closer and tighter relationships are found among people.

II. Maintenance of old houses

Regular and costly caring for old houses could be an important possible reason behind a low users' preference for old houses. Table 9.2 lists the observations' distribution among type A users which investigates their opinion regarding this issue.

Table 9.2: Observation distribution of DV2 of part 4(A) of the house user questionnaire among type A group

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
47%	39%	9%	5%	0%

Statement : I do not prefer living in an old house because regular maintenance of old houses is annoying and costly

Table 9.2 indicates that the majority of users 86% among type A houses agree with the statement. Therefore, results indicate that users of traditional houses of type A are suffering from the pressing need for regular maintenance of their houses and apparently this was a very likely reason for those users not to prefer living in these buildings.

III. Space arrangements of old houses

This variable investigates whether space arrangements among old houses of type A is a potential reason behind users' preference for living in new houses instead of old ones.

Spaces of the traditional Palestinian house (type A) are mainly organised around a courtyard, which acts as both a circulation and a living space. Table 9.3 indicates the observations' distribution among type A house users regarding the variable.

Table 9.3: Observation distribution of DV3 of part 4(A) of the house user questionnaire among type A group

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
25%	35%	4%	30%	6%

Statement : I do not prefer living in an old house because space arrangements of old houses create difficulties in use

Table 9.3 suggests that 60% of users of type A houses are inclined to agree and strongly agree with the statement, compared to 36% of users who disagree or strongly disagree. Thus a considerable percentage of users among type A houses believe that space arrangements in old houses could create difficulties in use, and that could be a possible reason for not preferring to live there.

It could be concluded that the sample users believe that space arrangements within the layout of old houses might not be convenient for contemporary use. Difficulties could arise in furnishing, especially when new furniture is to be used. Old layouts could also create inconvenience in circulation (6.3.3.I).

Users could have found that the layout of old houses mismatched with their current requirements because these houses were originally designed with rooms/ spaces having no specific function within house plans. Therefore, it could be that when traditional houses are used today and when specific uses are to be assigned to different spaces within these layouts, inconvenience might arise as a result of a mismatch between different space sizes and the activities/ functions they house. The way these functions are arranged and linked together within the house layout might cause inconvenience in use. To conclude, the result suggests that space arrangements within the layout of old houses could be a very likely reason behind users preference for living in new houses instead of old ones.

IV. General preference for old houses

This involves the examination of general preference for old houses among the three sample users (A, B, and C). The variable examines whether the sample users would

prefer living in old houses if they were to choose between an old or a new one. The Kruskal- Wallis (table 9.4) and the Median tests (table 9.5) suggested insignificant differences between the three groups in terms of the variable. Although the *Chi*- square results were too close to the critical value of 5.991 at $p \leq 0.05$ (*Chi*- square = 5.346, 5.963 according to the K-W and the Median tests respectively), the two values did not exceed the critical value of *Chi*-square in both tests.

Table 9.4: The result of the Kruskal Wallis test of DV4 of part 4(A) of the house user questionnaire in relation to IV (the house type)

DVs	N	Typ A MR	TypeB MR	Type C MR	Chi square	df	p	CV X ²
General preference for Old houses	173	93.72	92.02	75.09	5.346	2	0.069	5.991

CV= The tabulated critical value from the standard table of X²,df= Degree of freedom.
Chi- square (X²) must be equal or more than the stated value of CV to be significant (Clegg, 1997: 175).

Table 9.5: The results of the Median test of the DV4 of part 4(A) of the house user questionnaire in relation to IV (the house type)

DVs	N	Median	Type A	Type B	Type C	Chi- square	df	p	CV X ²
General preference for Old houses	173	> <= Median = 2	29 28	28 31	17 40	5.963	2	0.051	5.991

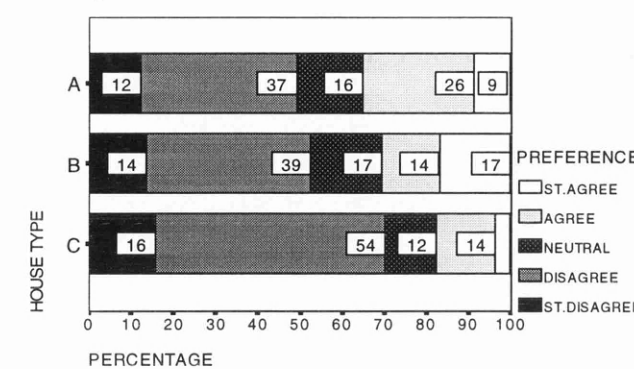
CV= The tabulated critical value from the standard table of X²,df= Degree of freedom.
Chi- square (X²) must be equal or more than the stated value of CV to be significant (Clegg, 1997: 175).

According to the statistical results, it was proved that the two nonparametric tests (the K-W and the Median test) had yielded exactly the same results in terms of variability between the three groups of sample users concerning the variable general preference for old houses. Consequently both tests confirm the null hypothesis and it was concluded that users among the three groups do not vary significantly in terms of their preference for old houses.

Figures 9.2, and 9.3 indicate the results of observations reported . Figure 9.2 shows the observations distribution within each of the three groups, while figure 9.3 suggests the means of groups observations. The two figures indicate that more users, within all groups, are inclined to disagree with the statement that suggests preference for old houses. However the largest percentage of disagreements was reported among users of

type C houses (mean of observations =2.35), while fewer disagreements were suggested among users of type B (mean =2.81) and A houses (Mean =2.82).

Figure 9.2: Observations distribution within groups by the DV preference for old houses.



Statement: I would have chosen to live in an old house, if I were to choose between an old or a new one.

Figure 9.3: Means of group observations by the DV preference for old houses.

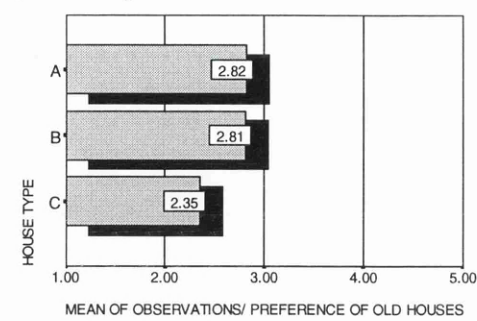
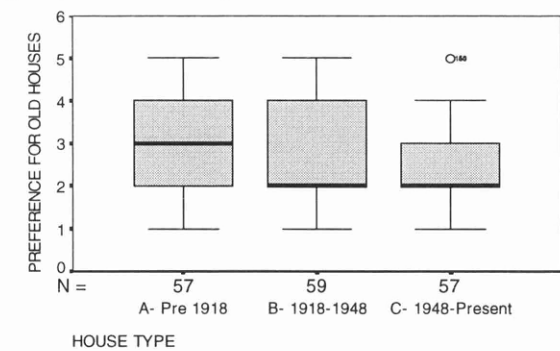


Figure 9.3 suggests that means of scores among groups fall between 2 and 3, which could imply a weak attitude among all users towards preferring old houses. The figure also indicates that users of type C houses have the least preference among groups.

Figure 9.4 indicates that users of type A houses have a neutral position towards preference for old houses (the median is 3= neutral), while among type B houses less preference is suggested (the median is 2= disagree). Among type C it is obvious that there is almost no preference for old houses (the spread of 50% of the cases between 2 and 3 and the median =4 disagree).

Figure 9.4: Boxplot of score distribution within groups for the DV preference of old houses.



Scale: 5= Strongly agree, 4= Agree, 3= Neutral
2= Disagree, 1= Strongly disagree

Accordingly, results could suggest that users among the three house types do not to a certain extent prefer living in old houses. As a result, it could be concluded that generally users in Palestine would prefer living in new houses if they were able to choose between old or new houses. Extent and level of preference were suggested as being higher among users of new houses.

Therefore this preference among users for new houses could indicate that users could have instigated change in traditional concepts of house design, as they could have encouraged the adoption of new concepts of house design and the abandonment of old ones..

VI. Discussion

Results of Part 4(A) of the house user questionnaire suggest that the general preference among sample users is not for old houses. Users of new houses of **type C** indicated the least preference for old houses, and it seemed that they have no interest in living in old houses.

Users of old houses of **type A** , although reporting more preference for old houses compared to type B and C users, overall preferred new houses. A considerable percentage of **type A** users (more than 60%) indicated preference for living in conserved old houses, and they considered maintenance and space arrangements two main reasons for not preferring to live in old houses.

As a result of investigation, important issues were raised by the data analysis of the variable general preference for old houses. Although the overall preference of users among the three groups was for new houses, it was found that more users among type A house, compared to users of the other two types B, and C, prefer living in old houses inside the old city of Nablus. This could be interpreted as a result of living in traditional courtyard houses, where houses are built attached, and close social ties might be established among occupants. This could have made the social life of the old city distinctive and preferable to its residents. On the other hand, it was suggested that the issue of conservation was vital for people living inside the old city of Nablus. Therefore it could be concluded that bad physical conditions, and the need for costly regular maintenance of old houses could have made them less attractive to users.

9.2.2. Results of PART 4(B): User Preference Relative to New Houses

Part 4(B) of the house user questionnaire investigates whether or not users in Palestine prefer new houses to old ones, and why. Three variables were used for examination:

- 1- Media influence on users' preference

- 2- New houses and their association with modernity
- 3- New houses as a sign of users' high social status

The Kruskal- Wallis and the Median tests were conducted to explore variations between the three groups of users which represent the three house types (A, B, and C), and to test the null hypothesis that no differences exist between groups in terms of the three variables. Results of the Kruskal -Wallis test are listed in table 9.6.

The Kruskal- Wallis test results reported the *Chi*-square values for the three variables; DV1= 4.522, DV2= 5.608, DV3= 0.986. The *Chi*-square value of DV1, DV2, DV3 did not exceed the critical value of 5.991 at $p \leq 0.05$ (Clegg, 1997:175).

Table 9.6: Result of the Kruskal Wallis test of the three DVs of part 4(B) of the house user questionnaire in relation to IV (the house type)

DVs	Cases N	Type A MR	Type B MR	Type C MR	Chi square	df	p	CV X ²
1- Media influence	173	79.93	83.35	97.85	4.522	2	0.104	5.991
2- Modernity and its association with new houses	173	84.46	78.19	98.67	5.608	2	0.061	5.991
3- New houses and users' high social status	173	81.99	86.73	90.77	0.986	2	0.611	5.991

CV= The tabulated critical value from the standard table of X², df= Degree of freedom.
Chi- square (X²) must be equal or more than the stated value of CV to be significant (Clegg, 1997: 175).

The null hypothesis is therefore confirmed for these three variables. As a conclusion, the three groups of users did not vary significantly in terms of the three variables tested i.e. the media influence on users' preference, new houses and their association with modernity, and new houses as a sign of user high social status.

The Median test was also carried out on the three variables. It compares the number of cases above and below the grand median (median of the whole group). Table 9.7 summarises the output of the Median test carried out on the three variables next to the house type. The *Chi*-square values for all three DVs (DV1= 3.917, DV2= 3.874, DV3= 0.081) did not exceed the critical value of 5.991 at $p \leq 0.05$. Consequently, the three groups of users representing the three house types A, B, and C did not vary significantly in terms of the three variables tested. It was concluded according to both tests (the K-W and the Median tests) that the three groups of users have more or less similar attitudes towards the four variables.

Table 9.7: The results of the Median test of the three DVs of part 4(B) of the house user questionnaire in relation to IV (the house type)

DVs	N	Median	Type A	Type B	Type C	Chi- square	df	p	CV X ²
1 Media influence	173	> <= Median = 2	23 34	26 33	33 24	3.917	2	0.141	5.991
2 Modernity and its association with new houses	173	> <= Median = 3	24 33	23 36	32 25	3.874	2	0.144	5.991
3 New houses and users' high social status	173	> <= Median = 2	28 29	28 30	29 28	0.081	2	0.960	5.991

CV= The tabulated critical value from the standard table of X², df= Degree of freedom.
Chi- square (X²) must be equal or more than the stated value of CV to be significant (Clegg, 1997: 175).

This means that there was no association between each of the three variables and users' preference for old /new houses. The result imply that neither the media, modernity, or social status has influenced users' preference. More investigation into each of these three variables of part 4(B) now follows.

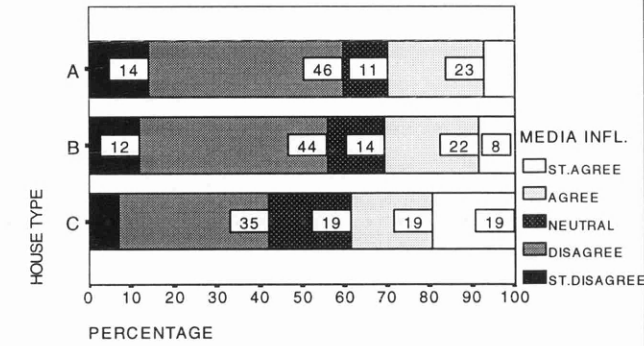
I. Media influence on users' preference

Investigation concerns the influence of the media (TV, magazines, ..etc.) on users' preference. It was assumed that Palestinian users could have been influenced by the media in their preference of new houses to old ones. Al- Faqih (1989: 49) argued that promotion of international architectural styles through different information media caused obscurity of traditional architecture by many new imported ideas.

The two statistical nonparametric tests (the Kruskal -Wallis and the Median tests) indicated insignificant differences between the three groups of users. The *Chi- square* result according to the K- W test = 4.522, and = 3.917 as a result of the Median test. Both values did not exceed the critical value of 5.991 at $p \leq 0.05$, thus according to both tests the three groups proved to have similar attitudes towards media influence on users' preference.

Figures 9.5 indicates that more users among the three groups disagree with the statement which suggests preference for new houses as a result of media influence. The figure implies that 60%, and 56% of users among type A and B houses disagree with the statement, while users of type C houses were split between agreement and disagreement.

Figure 9.5: Observations distribution within groups by the DV media influence on users' preference.



Statement : I would like to live in a new modern house like the ones we see on TV or magazines.

Figure 9.6 : Means of groups observation by the DV media influence.

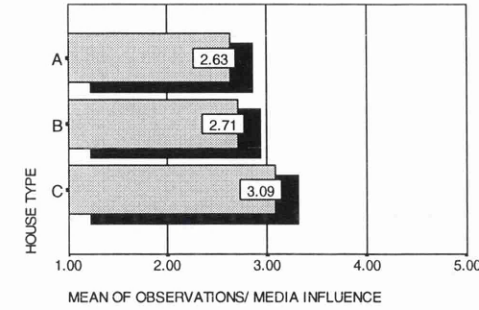
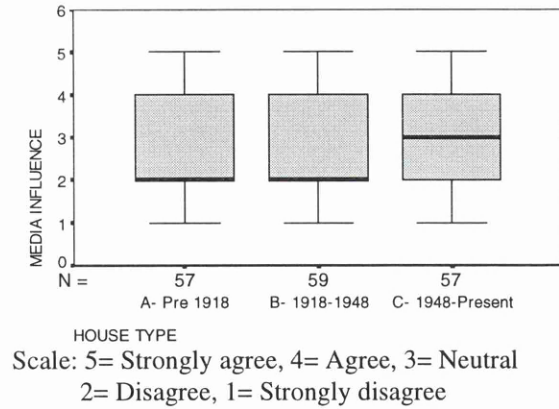


Figure 9.6 indicates means of observations between groups. It shows that group C users have the highest mean (3.09), while users of the other two types of houses A and B scored lower mean scores (2.63, and 2.71 respectively). This could suggest that users among old houses of both types A and B were to a certain extent not influenced by the media to prefer new houses to old ones; in contrast, more influence could be indicated among users of new houses of type C.

The boxplot diagram of figure 9.7 suggests similar spreads of observations among the three groups. It implies that the two groups of A and B have similar median value of 2 (disagree), while group C have a median value of 3 (neutral).

Figure 9.7: Boxplot of score distribution within groups for the DV media influence on users' preference.



It could be concluded that users of new houses (type C) are more likely to have been affected by the media compared to users of type A and B houses.

Therefore, the influence of the media could be one of the reasons behind the choice of type C users to live in new houses. Alternatively, results suggested less media influence on users of type A and B houses.

However, some influence could be implied among users of these two types (users who were inclined to agree with the statement). It could be inferred that users among old houses were influenced to a small extent by the media compared to a larger extent of

influence on users of new houses (type C). It could also be that other reasons such as the cultural and historical association with the old city and its traditional house have influenced their opinion/ preference.

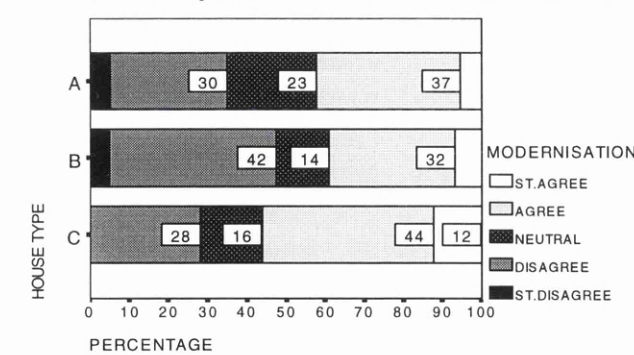
II. New houses and their association with modernity and progress

For further investigation of reasons behind preference of new houses, this variable intends to examine users' attitudes towards considering the abandonment of an old house for a new one an indication of modernity and progress.

Ceijka, (1982:90-100) wrote describing users in Jordan (the same could be applied to Palestine as 31% of the Palestinians live in Jordan(Tamari, 1994:17). He argued that the population believe that the replacement of traditional models by new imported ones means progress.

The Kruskal- Wallis and the Median tests suggested insignificant differences between groups; the *Chi-square* values were =5.608, and 3.874 according to the K-W and the Median tests respectively. Therefore the null hypothesis is confirmed, and it was suggested that the three groups of users have similar attitudes towards the variable. This implies that modernity and progress did not influence users' preference for old/ new houses.

Figure 9.8: Observations distribution within groups by the DV modernity and its association with new houses.



Statement: I believe that abandonment of an old house for a new one has connotations related to modernity and progress

Figure 9.9: Means of groups observations by the DV modernity and its association with new houses.

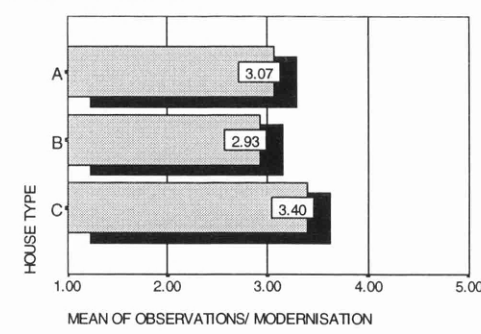


Figure 9.8 indicates that more users among type C houses accepted the concept suggested by the statement, that associated abandonment of an old house for a new one

with modernity and progress, compared to less acceptance among users of the other two types of houses A and B. Figure 9.9 implies that users among type C houses reported the highest mean score (3.40), thus it could be concluded that one reason behind type C users' preference to live in new houses is their desire to be modern or progressive.

On the other hand, users of type A houses reported observations that were subdivided between agreement, disagreement, and uncertainty (figure 9.8), nevertheless more users were inclined to agree (more than one third). This could imply that users, among traditional Palestinian houses of type A, think that new houses are associated with modernity and progress and that could suggest that they might have the opposite conception about their old houses. Thus they might think of moving out of their houses if they had the means to do so.

Users of type B houses reported the lowest mean score (2.93), which could suggest that users of type B houses are happier with their houses compared to users of type A houses. This could be attributed to fewer problems related to house condition and location compared to houses of type A located inside the old city of Nablus.

Figure 9.10: Boxplot of scores distribution within groups for the DV modernity

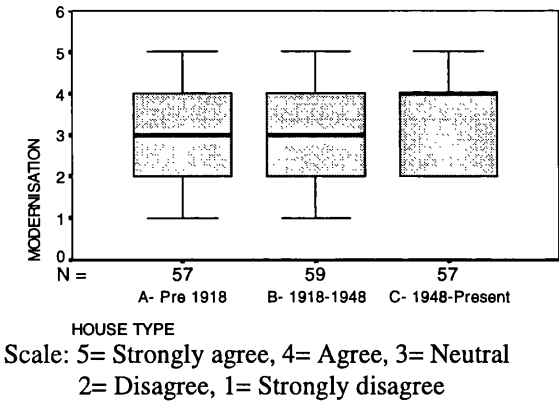


Figure 9.10 shows that observations of the two groups (A and B) have similar spread and median value of 3 (neutral), while group C has a shorter spread and a median value of 4 (agree). This could suggest that more users among new houses of type C are inclined to agree with the statement, compared to less agreement amongst the other two types of A and B.

The result could indicate that users among the three groups to a certain extent believe that moving to a new house is related to modernity and progress, however more inclination was suggested among users of type C houses. Therefore it could be concluded that Palestinian users, particularly of new houses, could to a certain extent

contributed to the adoption of new concepts in house design thus instigated change of Palestinian house design.

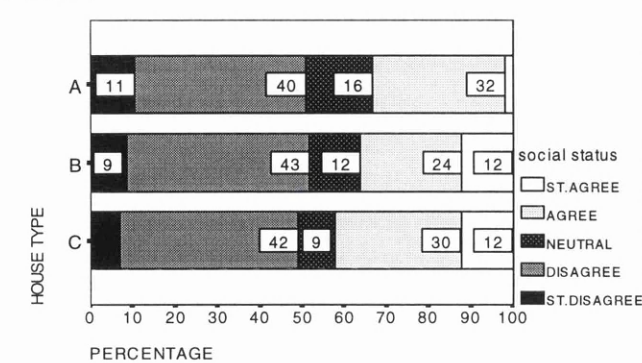
IV. New houses as a sign of users’ high social status

This variable investigates association of new houses with high social status of their occupants. It detects whether users think that moving to a new house could contribute to improving their social status.

Huet (1983: 56) stated that social advancement for Arab- Muslim societies in North Africa (the same could be applied elsewhere in the Arab world including Palestine) was accompanied by the abandonment of traditional housing. The real reason behind this, he explained, is the image of underdevelopment and poverty people think old houses reflect. On the other hand Ceijka (1982: 90-100) stressed that people think that progression from one social strata to another could be achieved by differentiation of housing consumption and architectural taste.

The two nonparametric tests (the K- W and the Median) both suggested no significant differences between groups in terms of the variable. *Chi*- square values were 0.986, and 0.081 according to the Kruskal- Wallis and the Median tests respectively, $df=4$, $CV=$ 5.991. Thus the null hypothesis is confirmed and it was concluded that the three groups of users have similar attitudes towards the variable, i.e. new houses being associated with high social status did not influence users’ preference.

Figure 9.11: Observations distribution within groups by the DV high social status association with new houses .



Statement: I believe that in order to upgrade my social status I need to change my old house for a new one.

Figure 9.12: Means of groups observations by the DV high social status association with new houses.

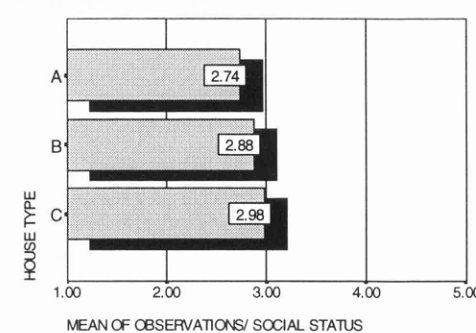


Figure 9.11 indicates that more rejections rather than approvals were reported among sample users in their response to the statement. Figure 9.12 implies that the mean scores of the three groups have close values, which could suggest that users among the three groups have a similar attitude, associating the exchange of an old house for a new one with an upgrade in the occupants' social status.

Figure 9.11 implies that although more users among the three groups were against the statement, more than one third of each group are in favour of it. This could suggest that more users in Palestine do not believe that social upgrading could be achieved by abandoning an old house for a new one, although the concept could be adopted to a certain extent by some users.

Figure 9.13: Boxplot of scores distribution within groups for the DV social status.

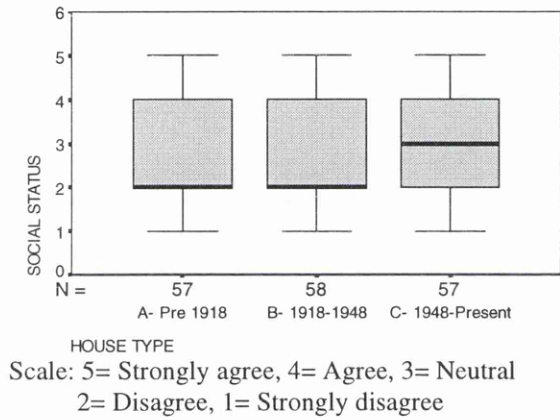


Figure 9.13 indicates that the three groups of users have similar spreads of observations. Group A and B have the same median value of 2 (disagree), while type C's median is 3 (neutral). This could suggest that users among new houses of type C are split between agreement and disagreement.

Thus it could be concluded that the concept of associating high social status with new houses could be accepted on a narrow scale in Palestine. Users adopting this concept could therefore to some extent have influenced change in house design, in that they may have brought about new concepts and encouraged the abandonment of old ones.

V. Discussion

Data analysis of Part 4(B) of the House User Questionnaire revealed that:

Compared to users of type A and B houses, users of **type C** houses were to a certain extent influenced by the media in their preference for new houses. They also associate new houses in general and new houses of Nablus in particular with modernity and progress.

Compared to users of new houses of type C, users of houses of both **types A and B**, were inclined to be less influenced by the media in preferring new houses to old ones. They reported less association of new houses with modernity, progress, and occupants' high social status.

The overall result could point to some reasons behind preference for new houses among sample users, particularly among users of new houses of type C.

1. To a certain extent there was an influence from the media on users' preference.
2. Association of new houses with the concept of modernity and progress.
3. On a narrow scale the belief that social upgrading could be achieved by moving to a new house.

9.3. CORRELATIONS BETWEEN VARIABLES OF PART FOUR OF THE HOUSE USER QUESTIONNAIRE

Correlation between different variables of chapter nine is carried out on each of the three groups of sample users A, B, and C. Only significant correlations with strong interrelationships at level $p \leq 0.01, 0.05$ are listed in table 9.8

Table 9.8 : Spearman's rho correlation test on different variables of chapter nine by house type

IV by DVS		N	rho	AP	P
Type A houses	-Conserved old houses by:				
	Preference for old houses	57	0.639	0.000	0.01
	Modernity association with new houses	57	-0.417	0.001	0.05
	Media influence	57	-0.365	0.005	0.05
	- Modernity association with new houses by				
	Media influence	57	0.574	0.000	0.01
Type B houses	Preference for old houses	57	-0.529	0.000	0.01
	-Modernity association with new houses by				
	Media influence	59	0.390	0.002	0.05
	-Media influence by:				
Type C houses	New houses as a sign of high social status	59	0.453	0.000	0.01
	-Modernity association with new houses by;				
	Media influence	57	0.717	0.000	0.01
	New houses as a sign of high social status	57	0.482	0.000	0.01
	-Media influence by:				
	New houses as a sign of high social status	57	0.573	0.000	0.01

Critical value of Spearman's rho. Rho must be \geq CV to be significant
N= 30, rho \geq 0.364 at level $p= 0.05$, rho \geq 0.478 at level $p= 0.01$ (Clegg, 1997:182)

The Spearman correlation test carried out on type A users revealed different interrelationships between variables:

Conservation of old houses was strongly correlated with preference for old houses ($\rho=0.639$, $p \leq 0.01$). It could be concluded that users among type A houses who prefer living in an old house to a new one are likely to prefer living in a conserved old house, which could suggest that maintaining an old dwelling in a good physical condition makes it more attractive for users.

Conservation of old houses was negatively correlated with media influence and modernity and its association with new houses ($\rho = -0.365$, -0.417 respectively at level $p \leq 0.05$). It was concluded that users among type A houses who would prefer living in a conserved old house are least likely to be influenced by the media to prefer a new house rather than an old one. Those users were not influenced by the media, or the media had no effect on them to prefer the new house to an old one.

Also they are not likely to leave an old house for a new one as a sign of modernity and progress. Those users also do not think that new houses signified higher social status of their users, thus they are not likely to leave their old house for a new one to express improvement of their social status.

This could suggest that among type A houses some users were in favour of living in an old house and they would prefer it if the old house was in a good physical condition.

Furthermore, among type A users modernity and its association with new houses was correlated positively with media influence ($\rho=0.574$, $p \leq 0.01$), and with new houses as a sign of high social status ($\rho=0.366$, $p \leq 0.05$), while it was negatively correlated with preference for old houses ($\rho = -0.529$, $p \leq 0.01$). This could stress the correlation discussed in the previous paragraph, and it could be concluded that users among type A houses who would prefer to live in a new house as a result of media influence are likely to believe that abandoning an old house for a new one has a connotation related to progress and modernity. Also they are likely to believe that in order to upgrade their social status they need to move to a new house. Obviously, in contrast, preference for old houses had a strong negative correlation with modernity and its association with new houses. It could be concluded that users among type A houses who prefer an old house

to a new one are more likely to disagree with the concept that abandoning an old house for a new building has connotations related to modernity and progress.

The Spearman's rho correlation test conducted on the **type B** users yielded the following correlation:

Positive correlations were found between new houses' association with modernity and progress, and media influence ($\rho = 0.390$, $p \leq 0.01$). It was concluded that users among type B houses (houses that represent the colonial period in Palestine), who are convinced that the abandonment of an old house for a new one has connotations related to progress and modernity are likely to be influenced by the media, and therefore prefer new houses to old ones.

Media influence was associated with social status ($\rho = 0.443$, $p \leq 0.01$). It was concluded that users of type B houses who were influenced by the media in their preference for a new house are more likely to believe that in order to upgrade their social status they have to change their old house for a new one.

The correlation test carried out on **type C** users reported the following interrelationships between variables:

The three variables media influence, new houses association with modernity, and new houses as a sign of high social status were strongly correlated at level $p \leq 0.01$. Modernity was correlated with media influence ($\rho = 0.717$), and with social status ($\rho = 0.482$), while media influence was correlated with social status ($\rho = 0.573$). These correlations could point to the fact that users of type C houses who were affected by the media to prefer new houses to old ones are more likely to believe that new houses are associated with modernity and progress. They also more likely to believe that social advancement could be achieved by abandoning an old house for a new one.

To summarise, different correlations between variables of **Part Four** of the house user questionnaire could indicate that users among the three house types are divided in their opinion and preference into two groups:

1. The first group who generally prefer an old house to a new one. They would prefer the old house to be conserved, thus the good physical condition of the old house is likely to make it more preferable and attractive to them. The same group of users are less influenced by the media, in that the media cannot change their views and influence them to be more attracted to new houses. This group do not think that a new house is associated with modernity or that the new house reflects an image of high social standard of its occupants.
2. The second group of users who prefer the new house to the old one. They were likely influenced by the image promoted by the media for the new house, also they associate the new house with modernity and progress. Furthermore, those users believe that a new house could reflect a higher social status of its user, thus for them it could be that old houses “reflect an image of underdevelopment, of poverty and worthlessness” (Huet, 1983: 56).

From the data analysis carried out earlier in this chapter it was revealed that more users of the new houses of type C belong to the second group, while among type A (old traditional houses) and type B (colonial central-hall houses), more users belong to the first group.

9.4. Users' Previous Residency

Past residential experience was investigated among sample users, in terms of the location of previous residence and reasons behind changing residence. The main objective is to find out if there is any association between users' preferences and their past residential experience. Users were asked to determine one of the five alternatives that determines their previous residence. Table 9.9 summarises the results according to house type.

Table 9.9 sheds light on the sample users' mobility and their previous residential experience. It indicates that a larger percentage of users among type A and B houses (i.e. 56.1% and 44.1% respectively) were permanent residents of these houses. While the larger percentage of type C houses (i.e. 35.1%) were living in houses in the same neighbourhood, only 7% among type C houses were permanent residents of the same

new house. This is as one would expect, as most of the new houses were built during the last three or four decades.

Table 9.9: Sample users previous residency by the house type

	Type A houses pre- 1918		Type B houses 1918- 1948		Type C houses 1948- present	
	Count	%	Count	%	Count	%
Always lived here	32	56.1%	26	44.1%	6	7.0%
House in the same neighbourhood	11	19.3%	10	16.9%	20	35.1%
House in the old city	6	10.5%	11	18.6%	9	15.8%
Old house outside the old city	4	7.0%	6	10.2%	5	8.8%
Others	4	7.0%	6	10.2%	17	29.8%

By examining mobility between **type A** house users, it was suggested that 19.3% of users were living in the same neighbourhood of the old city while 10.5% were living in other parts of the same old city. Only 14% of type A users had been living outside the old city and moved inside.

Among **type B** users, 16.9% were living in the same neighbourhood, while 18.6% moved from the old city. The rest were living in old houses outside the old city or moved from other places to live in Nablus. Alternatively, among users of **type C** houses more mobility was indicated as 15.8% moved from the old city and 8.8% moved from old houses (type B) outside the old city, while 29.8% were living in other places such as villages around the city or other cities and moved to new houses in Nablus.

To conclude from the previous results, it was implied that among type A and B houses (old houses of Nablus built pre- 1918, and 1918- 1948 respectively) users' mobility was limited to moving from the same neighbourhood or from another old house, while among type C houses movement was from the same neighbourhood, old houses inside (type A) and outside (type B) the old city and from other places outside Nablus. Mobility was implied on a small scale between houses of the old city (type A) to old houses outside the old city (type B), also from old houses outside the old city (type B) to new houses (type C). Although the trend was not so evident, it could be concluded that users inside the old city would move outside if they had the means to do so.

Reasons for changing residency were investigated among sample users (table 9.10). As was indicated before, a larger percentage of users of type A and B houses were permanent residents of their houses. Alternatively, most users among type C houses moved to their new house for reasons other than the ones specified by the house user questionnaire. It was found that among users of old houses of both types A and B, the main reason for changing residency was inappropriate house size, while among users of type C houses the two main reasons suggested were: dislike of the previous neighborhood and inappropriate house size.

Table 9.10: Reasons for change of residence among sample users by house type

	Type A houses pre- 1918		Type B houses 1918- 1948		Type C houses 1948- present	
	Count	%	Count	%	Count	%
Always lived here	32	56.1%	26	44.1%	6	7.0%
Small house size	8	14.0%	10	16.9%	12	21.1%
Dislike neighbourhood	3	5.3%	2	3.4%	13	22.8%
Political reasons	3	5.3%	3	5.1%	1	1.8%
Financial reasons	1	1.8%	2	3.4%	4	7.0%
Others	10	17.5%	16	27.1%	23	40.4%

9.5. CONCLUSIONS

Chapter nine has shed some light on the Palestinian user: his/ her preference for, and attitudes towards old houses of Palestine. Results of Part 4(A), which investigated preference relative to old houses, revealed that:

- Preference for conserved old houses was implied by 60% of users of old houses of type A.
- Regular maintenance was one of the reasons behind not preferring to live in old houses. This was suggested by 86% of users among type A houses.
- Space arrangements of old houses was indicated by 60% of users of type A houses a reason for not preferring to live in old houses.
- General preference among the three groups of users was found for new houses to old ones, however the trend was more evident among users of new houses of type C.

Results of Part 4(B), which examined users preference relative to new houses, unveiled that:

- It was suggested that the media influence on users' preference for new houses was not so strong, however more influence was indicated among users of type C houses.
- Users of old houses of both types A and B implied less association of the abandonment of an old house for a new one with modernity and progress compared to users of new houses of type C.
- More users among the three groups were inclined not to believe that social status upgrading could be achieved by exchanging an old house for a new one.

Data analysis yielded by chapter nine proved that overall preference among Palestinian users is more likely for new houses, with more preference for new houses being suggested among users of type C houses.

Investigation of users' previous residential experience revealed that large percentages of users of type A and B houses were permanent residents of their homes. In terms of mobility, however, it was found that:

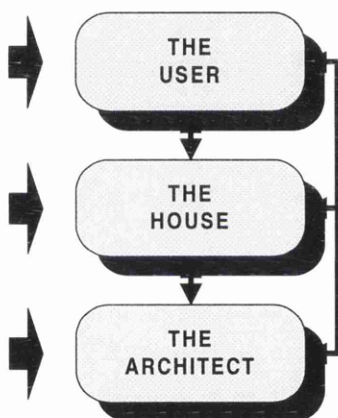
- Mobility among type A users was mostly within the boundaries of the old city.
- Mobility among type B users was from old houses inside or outside the old city, or another house in the same neighbourhood.
- Mobility among type C users was from houses in the same neighbourhood, or old houses inside or outside the old city of Nablus.

Reasons for moving or changing residence among the three house types were related to inappropriate house size, in addition to dislike of neighbourhood among users of type C houses.

The overall results could to a large extent point to the contribution of the Palestinian user to the change in house design as their preferences could have instigated this transformation.

9.6. REFERENCES

- AL- FAQIH, S. (1989): "Islamic Style in Contemporary Arab Architecture", *Mimar*, No.32, pp 48-52.
- CEJKA, J.(1982): " Regional Tradition and its Application in Temporary Architecture", *The Jordanian Engineer*, Amman, No.27, pp.90-100.
- CLEGG, F. (1997): *Simple Statistics, A course Book for the Social Sciences*, Cambridge University press, United Kingdom, Unit 8, 12, 15.
- FETHI, I. ,RIFAI, T.(1993): *Traditional Houses in Amman: A Topological Study of the Architecture of Early Houses of Amman, Jordan*, Symposium on the conservation of Architectural Heritage in Jordan and the Arab World 20-25 Nov., The University of Jordan and the Aga Khan Trust for Culture, Amman, Jordan.
- FRUDE, N.(1993): *A Guide to SPSS/PC+* Second edition, The Macmillan Press Ltd., London.
- GEORGE, D.& MALLERY, P.(1995): *SPSS/PC+ Step by step: a simple guide and reference*, Wadsworth Publishing Company, Belmont. Ch. 6, 8, 11, 30
- HUET, B. (1983): " The Modernity in a Tradition- The Arab Muslim Culture of North Africa", *Mimar*, No.10, pp. 49-59.
- NORUSIS, M. J.(1986): *The SPSS Guide to Data Analysis*, SPSS Inc., USA.
- ROGERS, M.E.(1989): *Domestic Life in Palestine*, Kegan Paul International, London, New York, pp.262.
- SPSS Base 7.0 Application Guide (1996), SPSS Inc.
- TAMARI, S.(1994): " Transformation of Palestinian Society: Fragmentation and Occupation" (Arabic translation), in Heiberg, Brumborg et al., *Palestinian Society in Gaza and Arabic Jerusalem: Survey of Living Conditions*, Institute of Palestinian Studies, Beirut.
- WEISS, N.A. (1995): *Introductory Statistics*, Fourth edition, Addison - Wesley Publishing Company, Inc., New York, England, Paris.



10. Chapter Ten

**Conclusions,
Recommendations and
Areas of Further Research**

10.1 INTRODUCTION

This study investigated the transformation in Palestinian house design that occurred during the last century. Related literature was reviewed (*Chapters 1,2,3*), and a research methodology was designed (*Chapter 4*) and adopted to assist examination of the research problem. Consequently, three propositions were identified to help formulating the research hypothesis. Several assumptions also supplemented the investigation of each proposition. The research model adopted comprises the three main elements of the study, namely, the house, the user, and the architect.

The method of investigation used was based on a questionnaire survey carried out in two case studies: the house user and the architect. The research variables were tested by the data collected from the two case studies. Various statistical techniques were used to analyse the main body of the research data. The SPSS (Statistical Package for Social Sciences) was adopted for data processing, analysis and presentation (*Chapters 5,6,7,8,9*).

This chapter reports on the findings of the study and tests the research hypothesis. It presents the thesis conclusions and recommendations, suggests areas for further study, and ends with some closing remarks.

10.2. AN OVERVIEW OF THE INVESTIGATION

This research examined the change in house design within the specific cultural setting of Palestine and assessed the extent of the contribution made by users and practising architects to such a change. It studied the development of the Palestinian house and identified three house typologies which have evolved over the past century.

- 1- **Type A**, the traditional house (courtyard house).
- 2- **Type B**, the colonial house (covered central- hall house).
- 3- **Type C**, the modern house.

Based on comparisons between the three identified typologies the research commenced by identifying the main characteristics of each house type, then it used users' assessment to determine certain aspects of the house namely, its image, layout, and condition.

The users' extent of contribution to change was evaluated through measurements of users' attitudes, preferences, satisfaction, and participation in the design of new private houses, while the architects' role in inducing change in house design was assessed by investigating their background (education, practice, and experience), their attitudes towards old and new concepts of house design, and their extent of involvement in the design and construction of private houses.

A single study with limited number of cases/ variables may at best confirm/ refute a hypothesis rather than establish a theory. It may also raise some pertinent questions, however, some conclusions were reached based on the evidence brought forward by the thesis' findings.

10.2.1. Theoretical Background

The literature review carried out covered the three main areas of concern: the Palestinian user (*Chapter 1*), the Palestinian house (*Chapter 2*), and the Palestinian architect (*Chapter 3*).

In regard to the Palestinian (West-Bank) user (*Chapter 1*) the literature revealed that the change which occurred in the Palestinian house design could be linked to parallel changes in the historical, social, and cultural contexts of Palestine. Therefore the socio-cultural change experienced by the Palestinian user during the last century and the resultant alterations to his/ her life style, family structure, and family size could, to a large extent, have influenced the user and modified his/ her attitudes, requirements, and preferences, and consequently his/ her satisfaction with the traditional house.

It also revealed that change or development in house design could indeed follow changes in users' requirements, aspirations, and satisfaction which could also themselves be influenced by shifts in socio-cultural, political, or economic circumstances.

Investigation into the Palestinian house (*Chapter 2*) and its evolution over time enabled the identification of three house typologies, the traditional courtyard house (pre- 1918),

the colonial, central- hall house (1918-1948), and the new modern house developed since the 50s. Therefore the change of house design in Palestine could have occurred in two stages:

1. The first stage witnessed the change of house design from the introverted traditional courtyard house to the extroverted villa type (the colonial, central- hall house). This occurred during the beginning and mid twentieth century.
2. The second stage was manifested by the adoption of new modern concepts of house design introduced by professional architects during the 50s.

It was maintained that the traditional courtyard house of Palestine was developed by the people to a state of satisfaction. Through the traditional concepts of house design, economical, energy efficient, and socially acceptable solutions were developed to provide convenient living conditions. However, adoption of the extroverted concepts of house design was abrupt and resulted in transformation of the built environment of Palestinian from a dense compact one to dispersed low density urban fabrics.

Reviewing the literature on the Palestinian architect (*Chapter 3*) revealed that architects were first appointed to the job of designing houses in Palestine during the 50s. This was a result of the increased sophistication of building technology and the introduction of new building materials, building codes, and planning regulations. Prior to that buildings were constructed by master builders and users.

A recent investigation carried by this study indicated that among Palestinian architects, a large number were local university graduates, and that most of them graduated during the last few years, i.e. during the nineties.

It was implied that the local universities of the West-Bank contributed to a large extent to the increase in the number of architects and this could suggest that in the future they might continue to train the majority of Palestinian architects. The model of education the local schools of architecture adopt is a Western or universal one; thus they have ceased to address the specific needs of Palestinian society in their curricula.

The contribution of Palestinian architects to change in house design could be seen as an attempt to improve the living conditions of users and satisfy their needs and requirements.

10.2.2. The Research Problem and Sub-Problems

The main research problem was identified as a study into the transformation in house design in Palestine, and an investigation of the extent of the contribution made by users and practising architects to that transformation (*Chapter 4*). Consequently three sub-problems were identified

The first sub problem is an evaluation of the development of house design in Palestine. This was carried out as follows:

1. The three generic house types were examined in terms of main characteristics, layout and exterior design (*Chapter 2*).
2. Each house typology was evaluated by means of empirical investigations. Descriptive statistics revealed general information about the physical condition of the three house types (*Chapter 5*).
3. The house's environmental and functional conditions as well as some of its social and psychological considerations were investigated (*Chapter 7*).
4. Issues related to the design process of new houses were discussed (*Chapter 8*).

The second sub problem is an assessment of the impact of users on the transformation of house design in Palestine. This was examined by the following

1. Evaluation of user's attitudes towards the image and the layout of the house (*Chapter 6*).
2. Measurement of user's preference for old or new houses (*Chapter 9*).
3. Investigation of user's (client's) extent of participation in the design process of private houses (type C) (*Chapter 8*).

The third sub problem is an assessment of the impact of practising architects on the transformation. This was tested by:

1. Evaluating the architect's attitudes towards old and new architecture of Palestine and investigating the impact his/ her education, experience and practice might have on his/ her attitudes (*Chapter 8*).
2. Assessing the extent of architects' participation in the design and construction of modern houses in Palestine (*Chapter 8*).

3. Comparison between the environmental and functional conditions of new houses designed by architects and those of the other two types of houses built without consulting an architect (*Chapters 5,6,7,8,9*).
4. Comparisons of attitudes, preference, and satisfaction among users of new houses designed by architects and those of users of the other two types of houses built by users and master builders (*Chapters, 6,7,8,9*).

10.2.3. Testing the Hypothesis

Three propositions were identified and several assumptions were stated to facilitate formulating the research hypothesis. Following the research methodology explained in *Chapter four* each of the research propositions and assumptions were tested against the evidence provided by the empirical work and data analysis carried out in *Chapters five to nine* inclusive.

Proposition one

Transformation of Palestinian house design is related only to changes in user's requirements, attitudes, and aspirations.

Assumptions:

1. Users have more positive attitudes towards new houses than towards old ones.
2. Occupants of new houses are likely to be more satisfied than users of old ones.
3. Overall preference among users is more for new houses rather than old ones.
4. Users in Palestine could participate to a large extent in the design of private houses.

The results of testing different assumptions related to this proposition have yielded that users have more positive attitudes towards new houses than towards old ones. Occupants of new houses are more satisfied with their houses than occupants of old ones, and the overall preference among users is more for new houses rather than old ones. It was found that users in Palestine could participate to some extent in the design of private houses.

As a result the first three assumptions (*Chapter 4, page 97*) were confirmed while the fourth assumption was rejected.

Proposition two

Transformation in Palestinian house design is related only to changes precipitated by the architect and not the user

Assumptions:

1. The educational background of Palestinian architects could affect their attitudes towards traditional and new architecture.
2. The architect's attitude towards traditional architecture could affect his/her practice, in particular, the design of private houses.
3. Clients could have no effect on the architect's design decisions, and therefore could not have affected his practice.

The results of investigating different assumptions related to the second proposition proved that the educational background of Palestinian architects does not affect their attitudes towards traditional and new architecture. It was also revealed that the architect's attitude towards traditional architecture could affect his/her practice; in particular, the design of private houses. Clients could have an effect on the architect's design decisions, and therefore could to a certain extent affect his practice in private house design.

These results confirmed the second assumption while refuting the first and the third (*Chapter 4, page 97-98*).

Proposition three

Transformation in house design is related to both the user and the architect

Assumptions:

1. Positive attitudes of users and their preference to new house schemes could have encouraged architects to adopt these schemes.
2. Users' high levels of satisfaction with new houses could have encouraged architects to endorse new concepts in house design.
3. Clients could have effective participation in the design of private houses.
4. Clients could have influenced the architects' design decisions in relation to private houses.

Empirical investigation confirmed all the four assumptions made to support testing the third proposition (*Chapter 4, page 98*). It was found that users reported positive attitudes towards and preference for new house schemes and this could have stimulated architects to adopt these schemes. Also it was suggested that high levels of satisfaction with new houses were indicated among users and this could have encouraged architects to endorse these concepts in house design. Furthermore it was proved that clients could have effective participation in the design of private houses and that they could have influenced the architects' design decisions in relation to this.

By examining the results of testing the three propositions set out by the research it is concluded that both users and architects contributed to the transformation of the Palestinian house design. This confirms the third proposition and rejects the first and second.

10.2.4. The Findings

The thesis findings fall into three areas of interest: the house, the user, and the architect

I. The house

The main findings concerning the Palestinian house are presented according to the variables used that relate to the house:

Layout

The layout of each of the three house typologies (A, B, and C) was assessed by their particular plan configuration, mean of total floor area and mode of number of rooms (*Chapter 5*).

Type A house (the traditional house) was identified by the open to sky central courtyard layout, a mean floor area of 110m², and a mode of 3 rooms per house.

Type B house (the colonial house) is identified by the covered central hall layout, a mean floor area of 160m², and a mode of 4 rooms per house.

Type C house (the modern house) is distinguished by the different arrangements of functions that are linked via corridors and lobbies, the mode of rooms per house is 7, and mean floor area is 260.

Physical condition

Stone was the main building material used in the construction of the three house typologies (A, B, and C). The physical condition of type C houses was the best among the sample, followed by type B houses (*Chapter 5*). Type A houses reported the worst house physical condition (figure 10.1).

Environmental condition

The three house typologies proved to have different environmental conditions in terms of quality of internal daylight, sunshine inside, humidity levels, thermal conditions in

summer and natural ventilation (*Chapter 7*). The worst conditions were found among type A houses while the best were indicated among type C houses. Therefore it was concluded that an improvement in house environmental conditions was suggested from type A house to type B then to type C (figure 10.1).

Social and psychological aspects

Investigation of the outlooks of the house and its orientation to interesting views yielded that both type B and C houses have better outlooks compared to type A. On the other hand, according to the Kruskal-Wallis test no significant differences existed between the three house typologies in the extent of providing privacy from next-door neighbours and passers-by. However, from observation analysis it was found that type A houses could provide less privacy compared to the other two types (figure 10.1) and this could be due to alterations to their original layouts (*Chapter 7*).

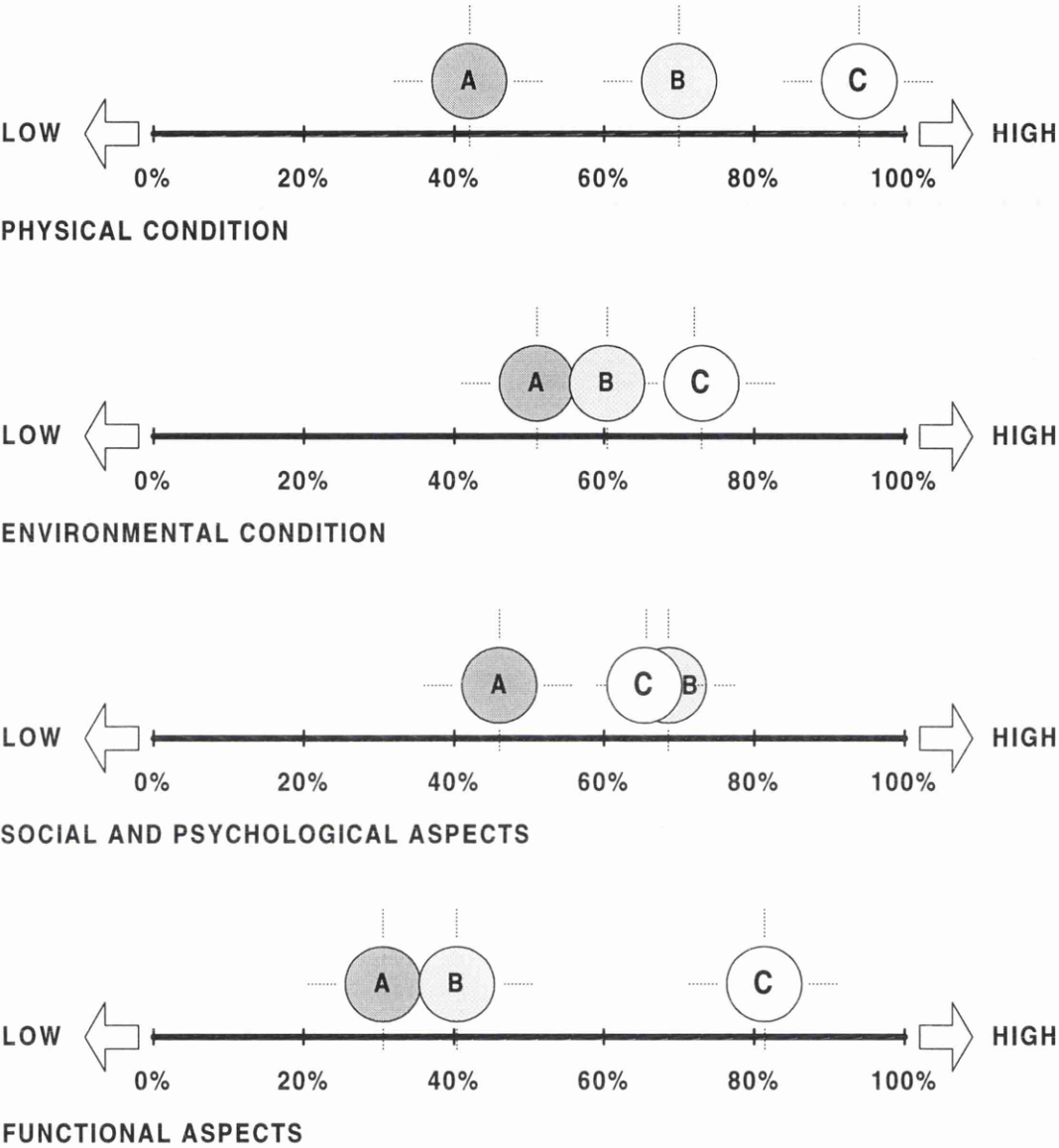
Functional aspects

Results of empirical investigation indicated that type A and B houses have poor functional aspects compared to type C houses, and that improvement in functional aspects of the house was detected from type A house to type B then to C (*Chapter 7*).

It was substantiated by the results of examination that type A houses accommodate the worst conditions in terms of different aspects examined. These results reflect the actual present devastating situation of these houses as a result of abandonment, neglect, lack of maintenance, and alterations to their original plans (figure 10.1).

Figure 10.1 compares the three house typologies in terms of physical and environmental conditions, as well as social, psychological, and functional aspects. The scale used is based on the percentage of users' observations reported by the house user questionnaire.

Figure 10.1: Graphical representation of the findings related to the Palestinian house, based on the percentage of users' observations obtained from the house user questionnaire



II. The user

User's attitudes (*Chapter 6*), preferences (*Chapter 9*), overall satisfaction with the house (*Chapter 6*) and extent of participation in the design process of new houses (*Chapter 8*) were investigated.

User's attitude towards the image and layout of his/ her house

It was established that the attitudes of users towards the image of their houses were to a certain extent different among users of the three house types, and this could be linked with the layout of different typologies. Thus users of type A houses with an introverted layout reported more concern for the internal image of their houses compared to the external image, while users of both of type B and C houses, which have extroverted layouts, reported similar concern towards both the external and the internal image of their houses.

Users of the three house types were keen to distinguish their houses from others. New houses of type C were considered by users to be a stronger expression of their identity compared to the other two types A and B.

Figure 10.2 compares the users' attitudes towards the image of the three house typologies. It indicates the percentage of observations estimated as an overall result of different DVs used for measurement (*Chapter 6*). The close percentages reported for the three house types could be explained by the result of The Kruskal- Wallis test, that only one variable (the house as an identity expression) among four yielded significant differences in attitude between groups (*Chapter 6, page 165*).

Users attitudes towards the layout of their houses indicated that the circulation and room arrangement of type A houses were the poorest compared to much more convenient circulation and room arrangement of type C houses. Rooms of type A houses were felt to be the least spacious among the three house types (figure, 10.2).

The provision of the reception room within the Palestinian house layout was considered a priority by users of the three house types.

It was concluded that improvement had occurred in house layout in terms of circulation or ease of movement between rooms and also on the room arrangement. This was indicated from type A to type B then to type C houses. Also it was shown that the reception room acquired an important position in the layout of the Palestinian house. While the literature review revealed its importance within traditional layouts, empirical

inquiry carried out substantiated its special position in all three types examined including the new modern houses of Palestine.

User's preference for old or new houses

The investigation, carried out to determine user's preference, revealed a general preference among users of the three house typologies for new houses rather than old ones. However, this was more evident among users of new houses of type C.

User's overall satisfaction with his/ her house

Again, investigation revealed that higher levels of user satisfaction existed with new houses (type C) compared to lower level of satisfaction with older houses of type A and B. The lowest levels were detected among type A users (figure 10.2).

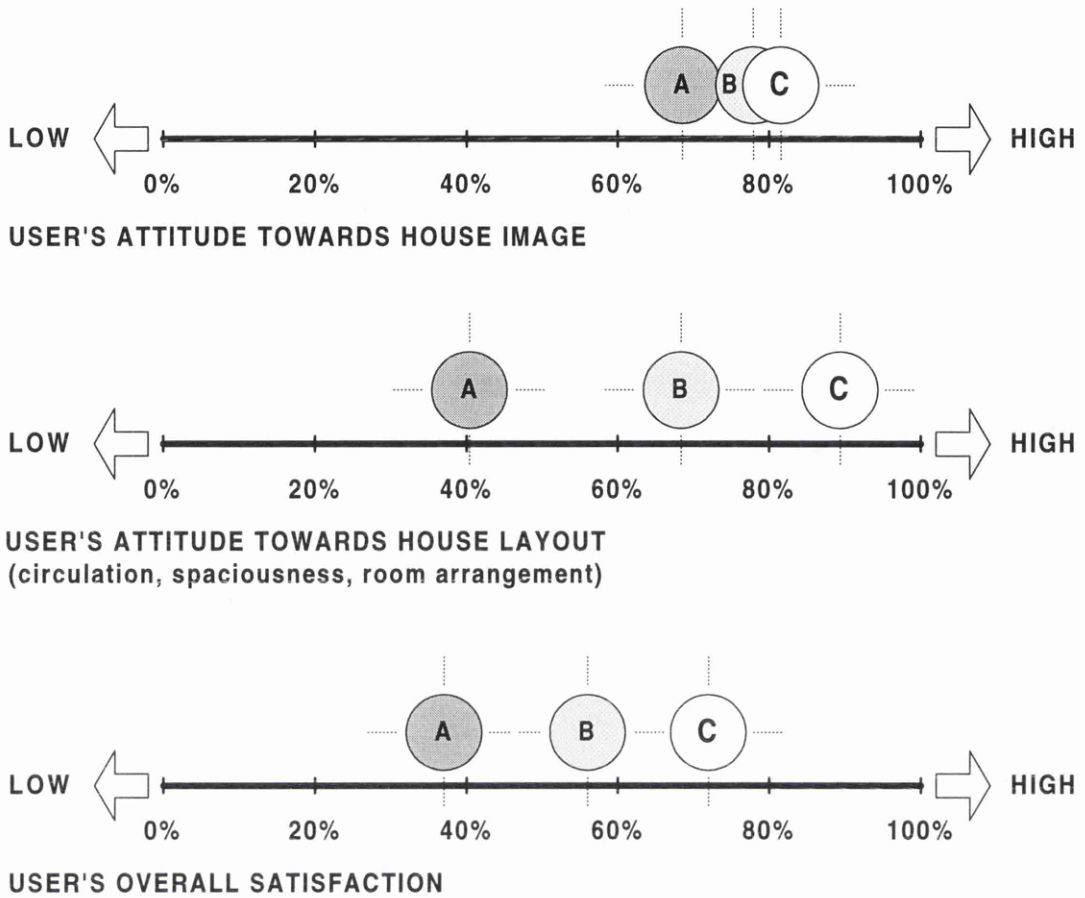
The client (user) as a participatory element in the design process of new houses

It was found that clients could to a certain extent influence the architect's design decisions in relation to the layout of the house (internal distribution of functions). In contrast, the extent of the client's influence on the exterior design of the house was proved to be very limited.

As an overall result of investigating issues related to users, it was found that users are inclined to show more positive attitudes towards and stronger preference for new houses, with less positive attitudes towards and less preference for old houses. Also it was revealed that user's overall satisfaction is higher with new houses. Clients could to a certain extent have influenced the change in the Palestinian house layout.

Based on the results of data analysis of the house user questionnaire, figure 10.2 compares users' attitudes towards the image and layout of their houses as well as their overall satisfaction with their houses.

Figure 10.2: Graphical representation of the findings related to the Palestinian user, based on the percentage of observations obtained from the house user questionnaire



III. The architect

The research examined the Palestinian architect's background, attitudes, and extent of involvement in design and construction of private houses.

The architect's education, experience, and practice

Investigation revealed that a large number of Palestinian architects are local university graduates, who graduated during the nineties, and their practice in house design mainly includes architectural design, supervising construction stages, and interior design (Chapter 3,8).

Conclusions drawn from data analysis (Chapter 8) proved that attitudes of architects towards traditional and new architecture of Palestine might not be influenced by the place or year of graduation of the architect, or length of his/ her experience.

The architect's attitudes towards the traditional Palestinian architecture

Investigation revealed that the majority of Palestinian architects are familiar with the traditional Palestinian architecture and that their work could, to a certain extent, be affected by this familiarity. They encourage borrowing design features from traditional Palestinian architecture, and they also believe that the introverted concept of house design is still viable today as a design option for housing. It was concluded that Palestinian architects would adopt traditional concepts mostly in the design of private houses.

However, by examining the development in private house design which has been taking place during the last 40- 50 years, i.e. the period of time during which architects started to influence the design of private houses in Palestine, it was obvious that the traditional concepts of design were not adopted at all; in fact it was abandoned for new schemes.

Therefore it could be inferred that although Palestinian architects today are familiar and aware of the traditional concepts of Palestinian architecture, and try to implement these when designing private houses, the actual implementation is fraught with difficulties (economic, social, technical, and those related to planning laws and regulations). It could be added that even if Palestinian architects have tried to implement traditional concepts of design they are faced with several problems that make the adoption of new concepts an easier way out.

The architect and the design of private houses

This study brought forward the following results concerning the architect's involvement in design and construction of private houses in Palestine.

1. Architects could have more control on the exterior design of the house rather than on its internal distribution (layout). Investigation proved that clients could to a certain extent influence the architect's decisions concerning the distribution of different functions of the house.
2. Architects could decide on the building materials used in construction of the house
3. Architects could supervise construction stages of the house.
4. Architects should consider the implementation cost of their designs as it was found that most clients ask for economical solutions from the architect.

It was concluded that architects could to a large extent have contributed to change in Palestinian house design in the second stage of transformation.

10.3. INTERPRETATION OF THE FINDINGS

The results of the study's main findings brought to the fore the areas of interest of the study. They facilitated identification of the transformation of house design, and the assessment of the extent of contribution of both users and architects to that transformation.

10.3.1. Transformation of Palestinian House Design

The outcome of the research clarified some aspects of transformation in the Palestinian house design by:

1. Defining the main characteristics of each of the three typologies (A, B, and C) identified by the study.
2. Identifying the transformation which has occurred in the layout and the exterior design of the Palestinian house.

Furthermore it was indicated that transformation has occurred in two stages:

1. **The first stage:** change from the traditional courtyard house (type A) into the colonial covered central hall house (type B). Transformation occurred as a result of alterations in the design concept from the introverted to the extroverted layout.
2. **The second stage:** change into the modern house (type C) was a result of the adoption of the modern house layouts.

I. The house layout

From information gleaned from the literature, reviewed in *Chapter 2*, and the architectural survey carried out on old buildings, it was revealed that layouts of type A houses were spontaneously built by master builders and users. In some cases, the interior spaces of these houses were irregular, in other words corners formed by interior walls were not at right angles. This was due to the compact and dense urban tissues of the old city, where houses were usually slotted into irregular sites between existing structures. It can hardly be a case of lack of skill, as the execution of some details

found prove the opposite. Maybe it was not that important to the user to have very regular interior spaces with right angles, as no regular furniture (in the modern sense) was used (*Chapter 2*).

This factor changed among type B houses, where geometry to a large extent governed the layout of these buildings. Axially symmetrical and balanced layouts with regular interiors and right angles were the norm for the colonial central-hall house. This could be a result of greater freedom given in building these houses as they were of the detached villa type and no site restrictions existed. Or perhaps the master builder was exposed to an outside influence (Western) and therefore lost the spontaneity with which type A houses were executed. Furthermore, regular furniture had started to be popular with users by that time.

Apparently, type C houses, which represent the modern house designed by an architect, were to a large extent influenced by the architect's personal approach to design based on his/ her education. Theoretical knowledge of geometry, structure, building construction and modern technology as well as different approaches to problem solving in design are all factors contributing to a large extent to the variety encountered in house layouts. This clearly distinguished type C houses from the other two types where, in both type A and B, a generic house layout was arrived at and adopted with minimal changes during a certain period of time.

The study has shown that transformation of house layout was manifested in the following aspects (*Chapter 6*):

1. An identification of different functions within the house layout and allotment of specific activities to spaces in the house was manifested in new houses of type C. Room arrangement and specifications of functions to different spaces of the house was a result of the architect's intervention. This was also manifested in separation of different functions within house layout, for instance, between quiet and noisy areas (bedrooms and children's play areas respectively), the use of bathrooms as buffer zones between bedrooms to reduce sound transmission, and the direct relationship

between kitchen and dining areas. These represent but a few of the architect's contributions according to new approaches to house layout design.

2. An enhancement of room arrangement was detected following the development from type A to type B to type C houses. The grouping of rooms around a courtyard in type A houses, and around the central hall in type B houses, was substituted by a more elaborate and planned arrangement of rooms in the modern house of type C.
3. An improvement in circulation or the ease of movement between spaces of the house. Thus the circulation of the type A house which was via the open courtyard was developed in type B houses to movement via the central hall. Finally circulation was conceived by corridors and lobbies in the modern house layout.
4. An increased feeling of room spaciousness manifested itself in the change of house design from type A to C.

Investigations verified that the development in house layout to a large extent influenced the house condition. Thus improvements in the environmental and functional conditions of the house were detected from type A to B to C (*Chapter 7*).

It was substantiated that the reception room kept its importance and location within the layout of the Palestinian house over time. Also the concern for house privacy from visitors and surrounding houses has proved important and it should still be considered in the design of private houses in Palestine today, although the concern is less strict than in the case of the traditional house.

II. The house exterior design

Basically, transformation of the exterior design of houses followed the change from the introverted to the extroverted layout scheme. The simple, blank traditional street facades of type A houses with their small veiled windows were changed to more expressive and decorated elevations of type B houses with large window openings, then changed again into the modern elevations of type C houses (*Chapter 2*).

Therefore the concept of the extroverted house put more focus on its exterior appearance. In the traditional house, the focus had been placed on the design of the elevations of the central court.

To conclude, type A houses were characterised by the simple anonymous elevations, apart from some focus on the entrance. Elevations of type B houses were characterised by focus on detail (stone details and decorations) particularly around window openings and entrance doors. Among type C houses, although much more variations exist, in general it could be said that they are simple and the emphasis placed by the architect upon the design of these elevations depends on the client's financial situation and the architect's experience and own design approach.

10.3.2. The Extent of the Users' Contribution to Transformation

The study associates the contribution of users to the transformation in house design in Palestine with the social and cultural change that occurred there during the last century. This resulted in alterations in users' life style, and consequently their satisfaction with the traditional concepts of house design (*Chapter 1*).

Investigation of users' attitudes, preferences, and extent of involvement in design of private houses facilitated assessing the extent of their contribution to change and revealed the following:

1. Users reported more positive attitudes towards the image and the layout of new houses (type C) compared to older ones of type A and B. This was confirmed by users' attitudes to circulation inside the house, spaciousness and arrangement of rooms, as well as self esteem identity. Furthermore user's overall satisfaction with new houses was the highest compared to lowest satisfaction levels reported with type A houses (*Chapter 6*).

Based on the previous results it was concluded that users are more comfortable and satisfied with the use of new houses and that could be due to the greater suitability of these houses to users' lifestyle today. This conclusion can suggest that

users could contribute to the change in house design by choosing design solutions that provide them with more convenience and satisfaction.

2. Investigation into house condition in the light of the user assessment (*Chapter 7*) led to the conclusion that environmental, psychological and functional conditions of the house improved from type A to B then to C and that in turn influenced the users' overall satisfaction with the house. Satisfaction was the lowest among users of type A houses and the highest among type C houses.

This proved that users could have encouraged change which for them meant improvement in different aspects of house condition.

3. Investigation of user's preference for old and new houses (*Chapter 9*) proved that general preference among users was for new houses. Results revealed that regular maintenance and space arrangements of old houses were reasons behind users preferring not to live in these buildings.

Data analysis proved that overall preference among Palestinian users is more likely for new houses, with stronger preference for new houses being suggested among users of type C houses.

4. Examination of the client (user) as a participatory element in the design process of private houses (*Chapter 8*) proved that users could have an influence on the architect's decisions related to design of the house layout; thus they could have a say on the space arrangements of the house. Alternatively, users' contribution to change in the exterior design of the Palestinian house was proved to be very little to negligible as the architect usually has total freedom to decide on the exterior appearance of the house. It was established that users could put some restraint on construction cost.

The findings suggested that users' contribution to change could be discerned through their attempts to sustain some aspects of house design while abandoning others. As mentioned earlier, users preserved the importance of the reception room within the layout of the Palestinian house; they also kept its location (near the

entrance door) in house plans. It was also suggested that users' concern for privacy relative to visitors and surrounding houses continued to influence the layout of houses in Palestine.

It was apparent from the results that the user's contribution was more effective and efficient during the first stage where the user, along with the master builder, was responsible for construction of private houses. The users' role was essential in decision making, but started to weaken during the second stage when the architect was appointed to the job of designing and construction of private houses.

10.3.3. The Extent of the Architects' Contribution to Transformation

It was substantiated by the literature reviewed (*Chapter 3*) that the design activity is associated with change, and that design means to induce change or improvement. However, the aim of the designer is to bring something new or original and his /her objective is to introduce an improvement in a certain product. Thus to what extent he/she can succeed in the aspired objective will depend on the degree to which users are satisfied or dissatisfied with the end product or the building.

Therefore if the concept of inducing change is accepted as a prerequisite for the designing activity, then architects are expected to contribute to change in every design they produce, and their aim is to satisfy their clients.

The architect's role in provoking change in house design during the second stage (from house type B to C) in Palestine could be summarised as follows:

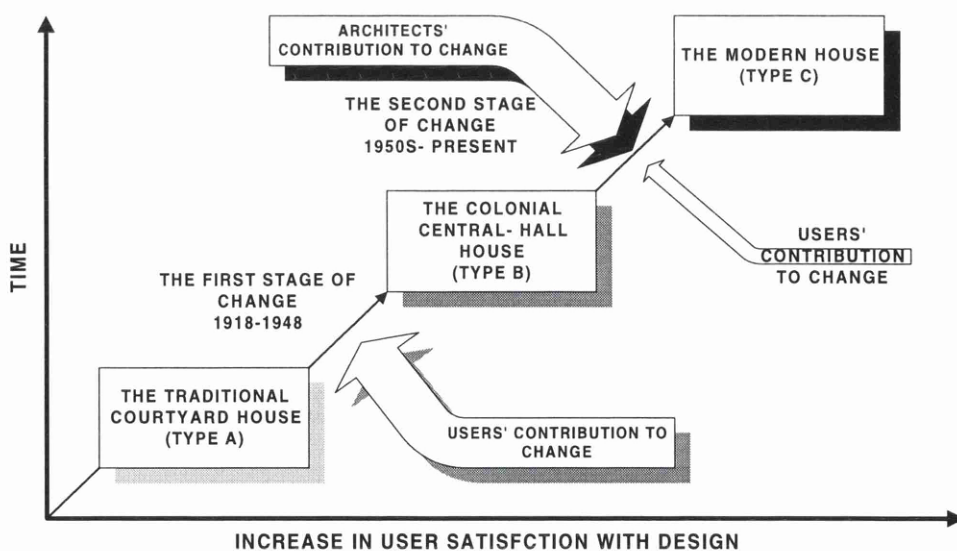
1. The architect contributed to change in the house layout by allotting special functions to spaces, and dedicating special importance to the living room.
2. The architect contributed to improvement of the house's environmental and functional condition. This was evident in enhancement of room orientation, arrangement, and spaciousness, as well as improvement in house circulation or the ease of movement between spaces of the house. Furthermore, it was evident that the architect contributed to solving problems related to kitchen size and location of bathroom within the house plan (*Chapters 6,7*).

3. Change of the house exterior design could be fully accredited to the architect, while it was found that users could have contributed to some extent to change of the house layout.
4. The architect's role in provoking change could be comprehended by the extent of his/ her involvement in the design process of private houses through designing and supervising construction stages (*Chapter 8*).

10.4. CONCLUSIONS

As an overall result it was concluded that the transformation of Palestinian house design was induced by both users and architects. Although both contributed to a certain extent to change, it was revealed that users instigated change in the first stage (during the beginning to mid 20s) and contributed to a large extent in substituting the traditional introverted concept of house design with the extroverted concept of the colonial central-hall house. The architects played a larger role in the second stage of transformation (which started during the 50s) where their contribution to change manifested itself in the introduction of modern house designs. Although the user's contribution continued in parallel with that of the architects during this stage, the user's influence was less than during the first stage (figure 10.3).

Figure 10.3: A graphical representation of the stages of change occurring in Palestinian house design.



Change in house design could be a result of different factors that influenced both the architect and the user. The change induced by the architect could be an attempt to create a better living environment for the occupants, while change instigated by the user might be a result of his/her effort to arrive at a design solution more suited to his/her lifestyle.

The influence of the architect on change could be of a different nature compared to that of the user. The user, working with the master builder (in both house types A and B), succeeded in arriving at a generic layout, used as an accepted model, and applied to house design in both house types A and B. The architect, on the other hand, produced various house layouts and contributed to an acceleration in the transformation. Education, the available technical knowledge, varied building materials (both traditional and high tech) were all factors which provided the architect with the opportunity to produce different layouts and design solutions that could not be reached with the limited skills of the master builder.

Regarding the continuity of traditional concepts of Palestinian house design, the study raised questions and brought to the fore the contrasting and contradicting points of view of users and practising architects. The traditional house of type A was deemed by the users to be not preferable and unsatisfactory, and was evaluated the worst in terms of all aspects examined (environmental, functional, social and psychological). Alternatively, the architects stressed that the traditional concepts of house design were viable options for today's housing, and it was found that most of the architects surveyed were willing to adopt these traditional concepts in their designs despite the difficulties which might face them in the actual implementation.

It was also substantiated that the architects' main objective is to satisfy their clients by the designs they produce. So, the pertinent question raised here is how is the architect best able to satisfy his/ her clients when adopting traditional design concepts, taking into consideration the fact that users think that these concepts are unsatisfactory and inappropriate for their contemporary lifestyle. This highlights the importance of the

architects' role in the development and adaptation of traditional concepts of house design, in order to cope with and satisfy the users' requirements for their lifestyle today.

Furthermore, the vital role of the local architectural education is accentuated. It's importance may arise from the fact that architects could be trained in such a way that aims to make them able to appreciate their traditional architecture and understand the forces behind its formation. They should also understand the needs, requirements, and aspirations of their people and be capable of translating that in design.

It could be that the architect's role is to create the link between old and new Palestinian architecture, therefore ensuring the continuity of local traditional architecture. In order to satisfy the users, obviously, it is impossible to use the same design concepts adopted hundreds of years ago as users are not the same. Their lifestyle, aspirations, and requirements have been altered, thus architecture has to change or adapt to new conditions. The adaptability of traditional architecture is a difficult task and a serious responsibility for Palestinian architects today. It is anticipated that their educational background could prepare them for this.

It could be concluded that the contradiction in views between users and architects has emerged from the fact that the architects, as professionals, are best able to visualise the adaptation of traditional concepts to modern life. Thus, their more positive response could be due to their insight of what could be achieved by incorporating the traditional concepts of design in house or housing architecture, while the users' negative or less positive assessment could be a result of their evaluation of the present situation of the traditional house without any development or adaptation. Therefore, type A (the traditional house) ceases to compete with the new house.

So, the key issue in the adoption of traditional concepts of Palestinian house design for future projects is the adaptation and the development of these concepts to satisfy the contemporary lifestyle of the users. Only by undertaking careful study and analysis can

the traditional concepts of design be developed to become truly competitive with modern house design schemes.

10.5. AREAS OF FURTHER RESEARCH

Some areas were highlighted for further research as a result of undertaking this study:

1. Closer investigation into the transformation of one specific house typology identified by the study, namely the traditional Palestinian house is required. This could be done by examining in detail the present situation of these houses and the alterations to their original layouts and the change of their use. It would be also interesting to link the transformation with changes in the users lifestyle, requirements, and change in family size.
2. Further investigation is required to assess the extent to which alterations in the traditional house layouts could affect the levels of privacy felt among users.
3. Research into the possibilities of applying traditional concepts of house design in the design of public housing. This could necessitate the study of separate units and different options for their grouping.
4. Using the three generic types identified by the study, investigation could focus on transformation of the exterior design of the Palestinian house. This could be done by detailed examination of the facades in terms of details, openings, proportions.. etc.
5. Investigate the extent to which users could contribute to change in house design during construction if it was not under the architect's supervision. This could be done by examining the original design proposed by the architects and how it was executed without their supervision and why.
6. Study the development of modern house design during the period influenced by the architect's contribution in order to evaluate change and detect the reintroduction, if any, of different traditional elements or details.
7. Investigate the means to develop the curriculum of architecture in local Palestinian universities and to integrate the study of traditional Palestinian architecture within it.

10.6. THE RECOMMENDATIONS

As a result of the investigation carried out during the course of this study various recommendations can be made:

1. The traditional Palestinian courtyard house used to provide its occupants with low cost solutions in terms of heating, cooling and ventilation. Reintroducing these solutions into new house design could result in a sustainable house with minimum energy consumption and less pollution for the environment (*Chapter 2*).
2. From the study of the layouts of both of type A and B houses, it was found that the layout of type A (courtyard house) is more flexible compared to that of type B. The type B house plan was found to be too rigid (symmetrical along an axis with all rooms being almost the same size), while in the type A layout rooms were of different sizes and no strict symmetry rules controlled the arrangement of different spaces within the house layout. Therefore the courtyard layout could be more amenable to future development regarding both house and housing design (*Chapter 2*).
3. It was stressed by the findings of the study that the adaptability of traditional concepts of house design to correspond to the changing way of living is required if these concepts are to be reintroduced as viable alternative design solution (*Chapter 8*).
4. As was verified by the study, the majority of architects surveyed encouraged the adoption of traditional concepts of Palestinian architecture. This means that attempts are taking place, and will continue in the future, to reintroduce these concepts (*Chapter 8*).
5. Furthermore, it was revealed that the extent of the architect's familiarity with traditional concepts of house design affects his/her practice. This could be attributed to the role of local schools of architecture in training architects in such a way to ensure familiarity with traditional Palestinian architecture and its concepts (*Chapter 8*).
6. It was found that Palestinian schools of Architecture adopt curricula similar to those of Western schools of architecture (*Chapter 3*). Therefore it is recommended that the

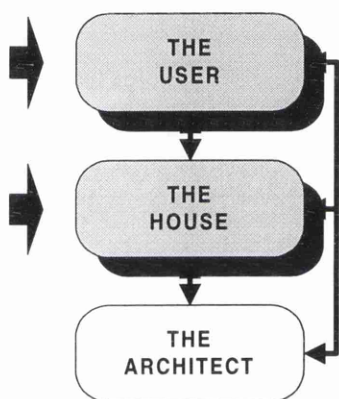
curriculum of the Palestinian schools of architecture could be developed to take account of both national and international aspects of architecture.

7. Investigation substantiated that development occurred in new houses in terms of circulation, room arrangement, kitchen size, and bathroom location. This resulted in an increase in the levels of user's overall satisfaction. Therefore it is recommended that these aspects be considered in design of new houses to arrive at increased satisfaction among occupants (*Chapters 6,7*).
8. The research highlighted the importance of user's or client's participation in the design process of their houses. It was found that spending enough time with the architect during the preliminary stage of design, and sharing decisions with him/her in choosing building materials could generate more satisfaction among users. Also it was revealed that users who contributed to the planning of their houses layouts did not have the design of their houses modified during execution (*Chapter 8*).
9. It was found that some aspects of house design are still considered in new houses, such as the importance and location of the reception room, and privacy considerations relative to visitors and surrounding houses. Thus it is recommended that architects stress these issues in their future design of private houses (*Chapters 6,7,8*).

10.7. CLOSING REMARKS

It may be that the change in house design investigated was largely affected by the specific circumstances Palestine has experienced during the 20th century. These conditions could have accelerated the change in different walks of life for the Palestinians and might have seriously threatened their identity. However, this might motivate Palestinians (both users and architects) to reintroduce the traditional concepts of architecture to consolidate their identity in their built environment and strengthen their roots in their homeland.

This study can be seen as a milestone in the investigation of the housing development in Palestine, although it may be problematic to evaluate the future developments in an uncertain political environment.



Appendix 1

The House User Questionnaire

PART ONE: HOUSE PROFILE

Please answer the following questions about your house.

PART ONE (A): GENERAL INFORMATION

1- Year of construction: The house was built in the year										
2- Location: The house address										
3- Ownership: The house is			Owned				Rented			
House characteristics										
4- The number of storeys the house has										
Layout										
5- The total floor area of the house (approximately)										
6- The number of rooms in the house										
	Reception	Living	Dining	Kitchen	Bathroom	Bedroom	Balcony	Garden	Others	
No.										
Plan configuration										
7- Does the house plan possess any of the following architectural elements?										
Open courtyard		Central hall surrounded by rooms			Outside garden		Others (specify)			
Family size										
8- Family size: The number of the family members living in the house										

PART ONE (B): PHYSICAL CONDITION

BUILDING MATERIALS

9- Materials used in the construction of the house			
Stone	Concrete	Concrete blocks	Others
10- Materials used for window frames			
Aluminium	Iron	Wood	Others (Specify)

PHYSICAL CONDITION

11- On a scale of 1- 3 how do you rate the physical condition of your house?			
	Good (1)	Fair (2)	Bad (3)
From the inside			
From the outside			

PART TWO: USER'S ATTITUDES TOWARDS HOUSE IMAGE AND LAYOUT

12- Please indicate the extent to which you agree with the following statements regarding your own attitude towards the image and layout of your house:

PART TWO (A): The image of your house:

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1	I care what people think of my house.					
2	I care what visitors think of my house.					
3	I would like my house to look distinguishable from other houses.					
4	My house reflects my identity.					

PART TWO (B): The layout of your house:

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
5	I think that the circulation in my house is convenient					
6	I think that the rooms of my house are spacious.					
7	I think that the arrangement of rooms inside my house is convenient for use.					
8	I think that the provision of a reception room in my house is a priority.					
9	I think that the reception room in my house is the most important room in the whole house.					

PART THREE: HOUSE CONDITION (ENVIRONMENTAL, SOCIAL AND PSYCHOLOGICAL, AND FUNCTIONAL)

13- Please indicate to what extent you agree with the following statements regarding the environmental, social and functional aspects of your house. Choose one of the five alternatives:

PART THREE (A): Environmental Condition

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1	Natural light in my house is insufficient.					
2	The sun never enters my house, or it does for less than four hours a day in winter.					
3	My house is uncomfortable because of high humidity levels.					
4	My house is too hot during summer.					
5	My house suffers from poor natural ventilation.					

PART THREE (B): Social and Psychological needs

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
6	My house lacks interesting views.					
7	My house does not provide enough privacy from next door neighbour and passers-by.					

PART THREE (C): Functional aspects

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
8	The total area of my house is small in relation to the size of my family.					
9	The bathroom in my house is inappropriately situated.					
10	The kitchen in my house is too small.					
11	My house needs maintenance frequently.					

PART FOUR: PREFERENCE FOR OLD OR NEW HOUSES

14- Please indicate to what extent you agree or disagree with the following statements to express your preference of old or new houses (**answer the first three questions only if you live in an old house inside the old city**):

PART FOUR (A): Preference relative to old houses

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1	I would prefer to live in a conserved old house.					
2	I do not prefer living in an old house because regular maintenance of old houses is annoying and costly.					
3	I do not prefer living in an old house because space arrangements of old houses create difficulties in use.					
4	I would have chosen to live in an old house, if I were to choose between an old or a new one.					

PART FOUR (B): Preference relative to new houses

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
5	I would like to live in a new modern house like the ones we see on TV or magazines					
6	I believe that the abandonment of an old house for a new one has connotations related to modernity and progress.					
7	I believe that in order to upgrade my social status I need to change my old house with a new one.					

PART FIVE: OVERALL ASSESSMENT

15- OVERALL SATISFACTION How would you sum up your feelings about your house?	Very Satisfied	
	Satisfied	
	Neither satisfied nor dissatisfied	
	Dissatisfied	
	Very dissatisfied	

PAST EXPERIENCE

- 16- Before living here, you were living in (Choose one alternative)
- 1 ☐ Another house in the same area

4 ☐ I have always lived here

2 ☐ Another house in the old city

5 ☐ Others (Specify)

3 ☐ An old house outside the old city
- 17- The reason for moving to your present house (Choose one alternative):
- 1 ☐ My previous house was small and not suitable

2 ☐ I was not satisfied with the location of my previous house

3 ☐ The reasons were political, it was related to the situation during the Intifada.

4 ☐ Improvement in my financial situation enabled me to move

5 ☐ Others (Specify)

PART SIX: THE CLIENT AS A PARTICIPATORY ELEMENT IN THE DESIGN PROCESS OF PRIVATE HOUSES

18- Indicate the extent to which you agree with the following statements to determine your satisfaction with the architect’s work during the process of design and construction of your house:

4a- The design stage

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
1	The architect was easily convinced to make changes on the house layout during the design stage .					
2	The architect spent enough time to understand our requirements during the design stage.					
3	The architect had total freedom to decide on the external appearance of our house.					
4	We played an important role in planning the interior of our house.					

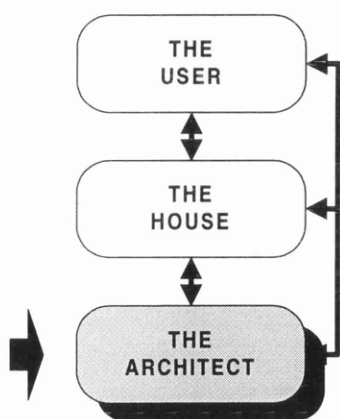
4b- The construction stage

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
5	The architect’s design was implemented without modifications during construction.					
6	The architect chose all of the building materials used in our house.					
7	The architect was responsible for supervision during construction.					
8	Most of the architect’s ideas and suggestions were reasonable in cost.					

4c- The occupancy stage

		Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
9	The architect succeeded in utilising the space inside our house.					

10	How would you sum up your feelings about the architect’s design of your house?	Very satisfied	
		Satisfied	
		Neither satisfied nor dissatisfied	
		Dissatisfied	
		Very dissatisfied	



Appendix 2

The Architect Questionnaire

The Architect Questionnaire
Ph.D. student: Eman Al- Amad

Mackintosh School of Architecture
Supervisor: Dr. Raid Hanna

PART ONE: General information

1- Name

Education

2- Place of graduation

3- Year of graduation

Practice

The architect's office:

4- The year the office was established

5- The number of architects in the office

6- The number of draftsmen in the office

Experience

7- How many years have you been in the profession?

8-In relation to your experience in house design. What type of practice do you operate? (tick as applicable)

<input type="checkbox"/>	Architectural design	<input type="checkbox"/>	Contracting
<input type="checkbox"/>	Supervising Construction stages	<input type="checkbox"/>	Interior design
<input type="checkbox"/>	Landscaping	<input type="checkbox"/>	Conservation

PART TWO: Attitudes Towards Traditional Palestinian architecture

9- Are you familiar with the traditional architecture of Palestine?

<input type="checkbox"/> Yes	<input type="checkbox"/>	<input type="checkbox"/> No	<input type="checkbox"/>
------------------------------	--------------------------	-----------------------------	--------------------------

If the answer is yes to what extent does this affect your designs?

<input type="checkbox"/> To some extent	<input type="checkbox"/>	<input type="checkbox"/> Not at all	<input type="checkbox"/>
---	--------------------------	-------------------------------------	--------------------------

Comments

10- Do you encourage borrowing elements from traditional Palestinian architecture?

<input type="checkbox"/> Yes	<input type="checkbox"/>	<input type="checkbox"/> No	<input type="checkbox"/>
------------------------------	--------------------------	-----------------------------	--------------------------

Comments

11- Do you advise your clients of traditional design concepts found in the traditional architecture of Palestine?

<input type="checkbox"/> Yes	<input type="checkbox"/>	<input type="checkbox"/> No	<input type="checkbox"/>
------------------------------	--------------------------	-----------------------------	--------------------------

Comments

12- What do you think of the introverted courtyard concept in house design? Is it a viable design option for today's housing?

Yes		No	
-----	--	----	--

Yes		No	
-----	--	----	--

Comments

13- Do you adopt any traditional concepts in your designs? in the design of

	Private houses		Housing schemes
	Public buildings		Others (specify)

14-What do you think are the difficulties in adopting traditional principles into new architectural designs?

PART THREE: Houses of Nablus (Type A and B)

15-Do the following statements apply to the old houses inside and outside the old city of Nablus?

		Old houses inside the old city		Old houses outside the old city	
		Yes	No	Yes	No
1	Not suitable for use today				
2	Suitable for use after conservation				
3	Even after conservation, are incompatible with new houses				

Conservation of old houses

16- Have you done any conservation work to old houses?

Yes		No	
-----	--	----	--

Section 4: Design of private houses

17- To what extent do clients affect your design decisions, especially in designing private houses?

		to some extent	Not at all
1	On the internal distribution		
2	On the outside appearance		

18- What is the most important space in the house, to which you give particular attention?

[illegible]

19- What is the most important space from the client's point of view in private houses?

[illegible]

20- Do the majority of your clients focus on the following in the layout of their houses (answer yes or no)

		Yes	No
1	Arrangement of rooms		
2	Spaciousness for rooms		
3	A reception room as the most important room in the house		
4	Privacy		
	Private circulation for the house wife		
	Separation between spaces used by visitors and family members		
	Privacy for the outdoor spaces and balconies		
5	Orientation of rooms		
6	Views		
7	Economical solutions		

21- Do the majority of your clients request the following in the exterior appearance of their houses (answer yes or no)

		Yes	No
1	Focus on elevations seen from the street		
2	Distinguished entrance		
3	Expenditure to impress (if possible)		

22-Do you introduce new materials in your work?

Yes		No	
Yes		No	

If the answer is yes , do you introduce your own way of using them?

Comments
.....
.....

Section 5: Architect’s general attitude

23- Do you think the new architecture in Nablus should

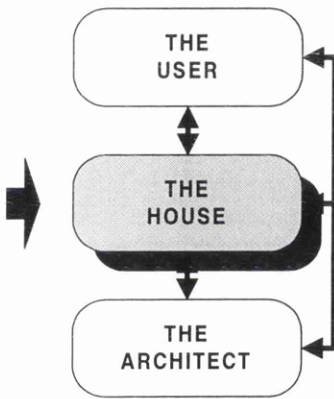
	Reflect old traditions
	Present a forward- looking image
	Combine aspects of old and new

24- If you could afford a new house, would you build it adopting traditional or modern architecture?

.....
.....
.....

Please provide further comments

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....



Appendix 3A

The Traditional Courtyard House in Palestine -Type A-: Examples

Appendix 3A presents three example of the traditional courtyard house in Palestine identified by the study as house type A. The three examples are constructed on more than one level to ensure separation between spaces used by guests (mail quarters) and other private section of the house (female quarters).

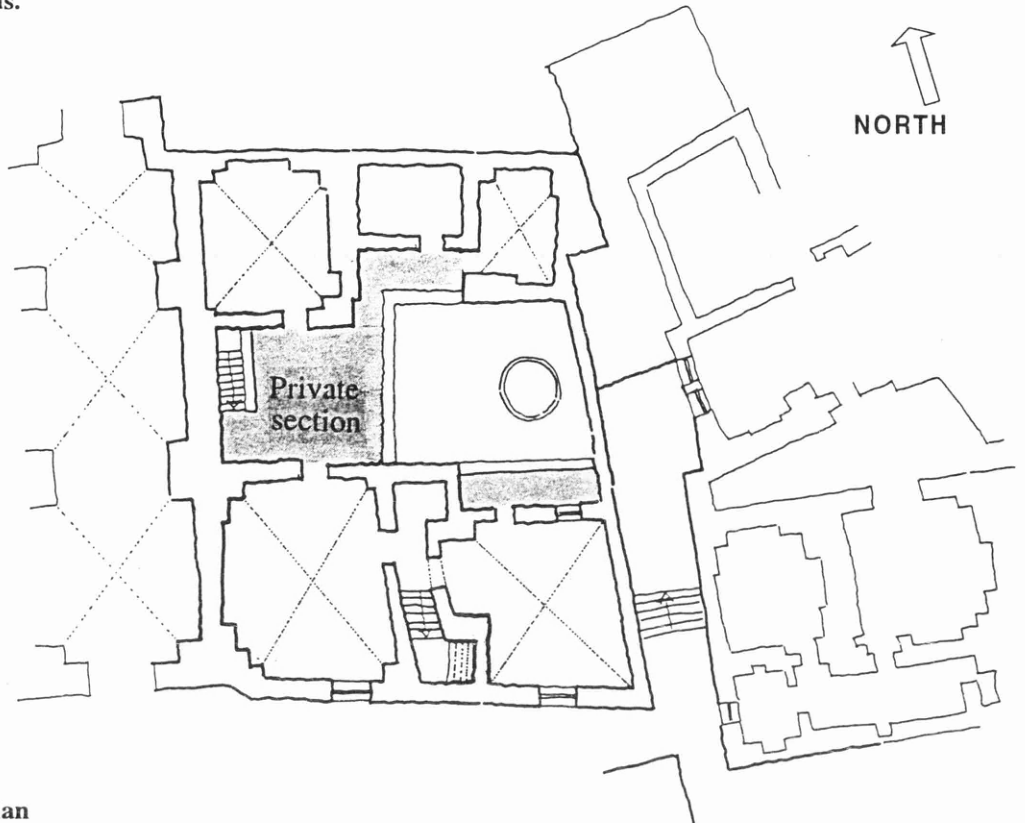
The three examples are inwardly oriented with all spaces open towards the courtyard, except where it is possible to open some windows to the outside, e.g. the reception room of example one (figure 1) and almost all spaces of example two (figure 2), which is a not the typical case among houses of the old city of Nablus.

Example one is approached from the street by few steps. These separate the house from street level, elevate the windows opening onto the street, and give more privacy to the main entrance and the court. Example two is approached by a private lane. It has a separate entrance for the reception room (figure 1, plate 1).

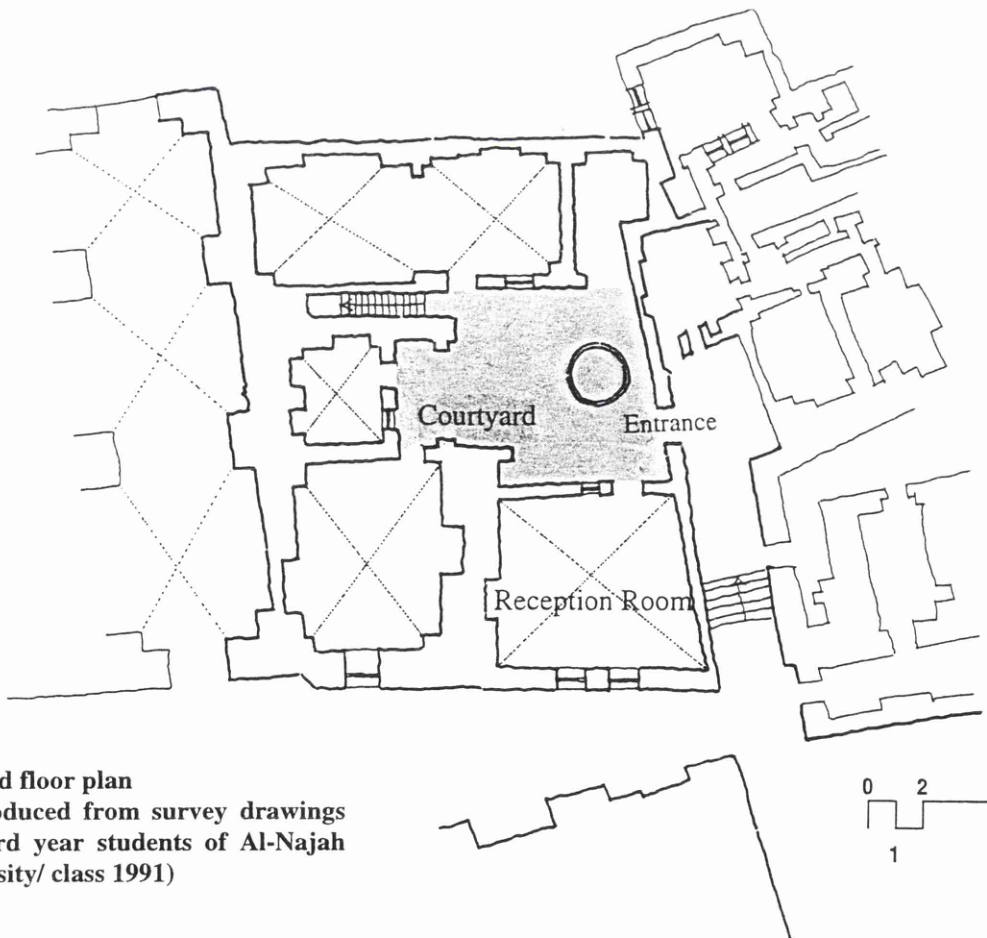
The third example is separated from the street by one level, which used to house stables. The first floor is the male quarter, while the second is the private female section. The house has two entrances the main and the secondary entrance which connects the second floor to the outside (figure3).

For more detailed information about the traditional Palestinian house refer to *Chapter 2*.

Figure 1: Example of the courtyard house in Palestine. A house in the Qaryoun quarter in the old city of Nablus.

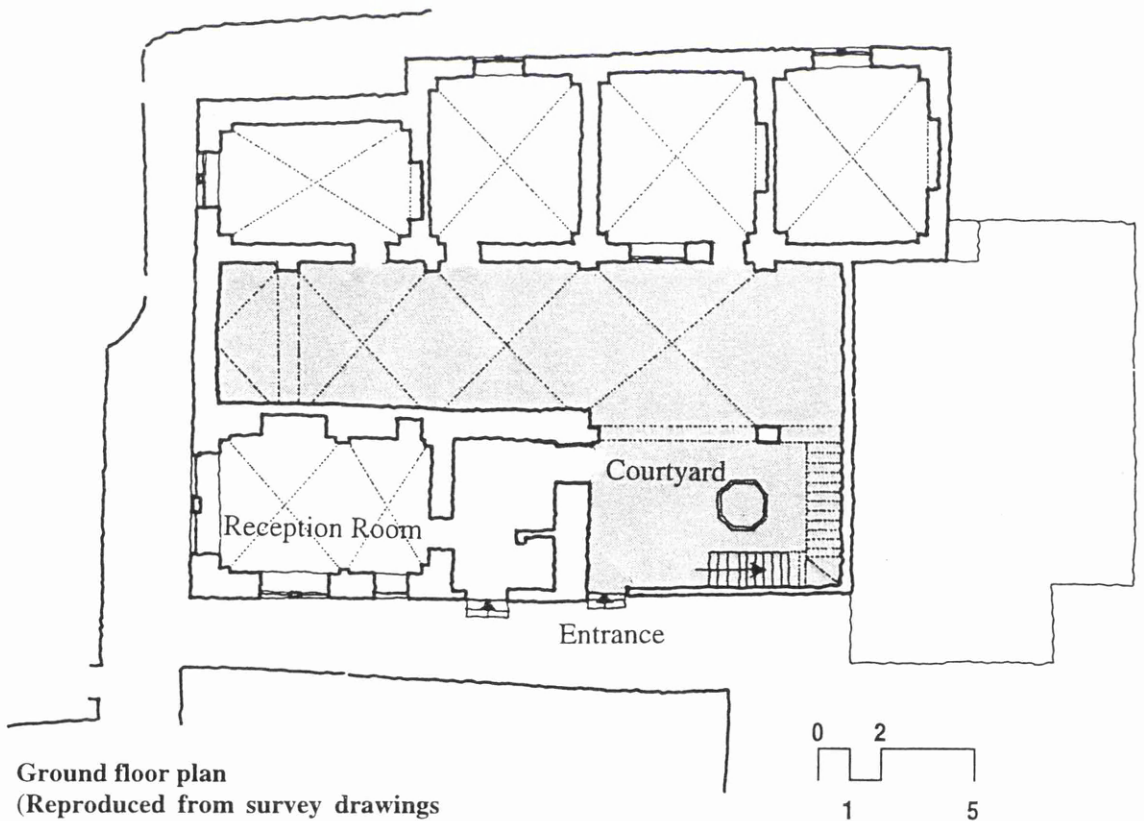
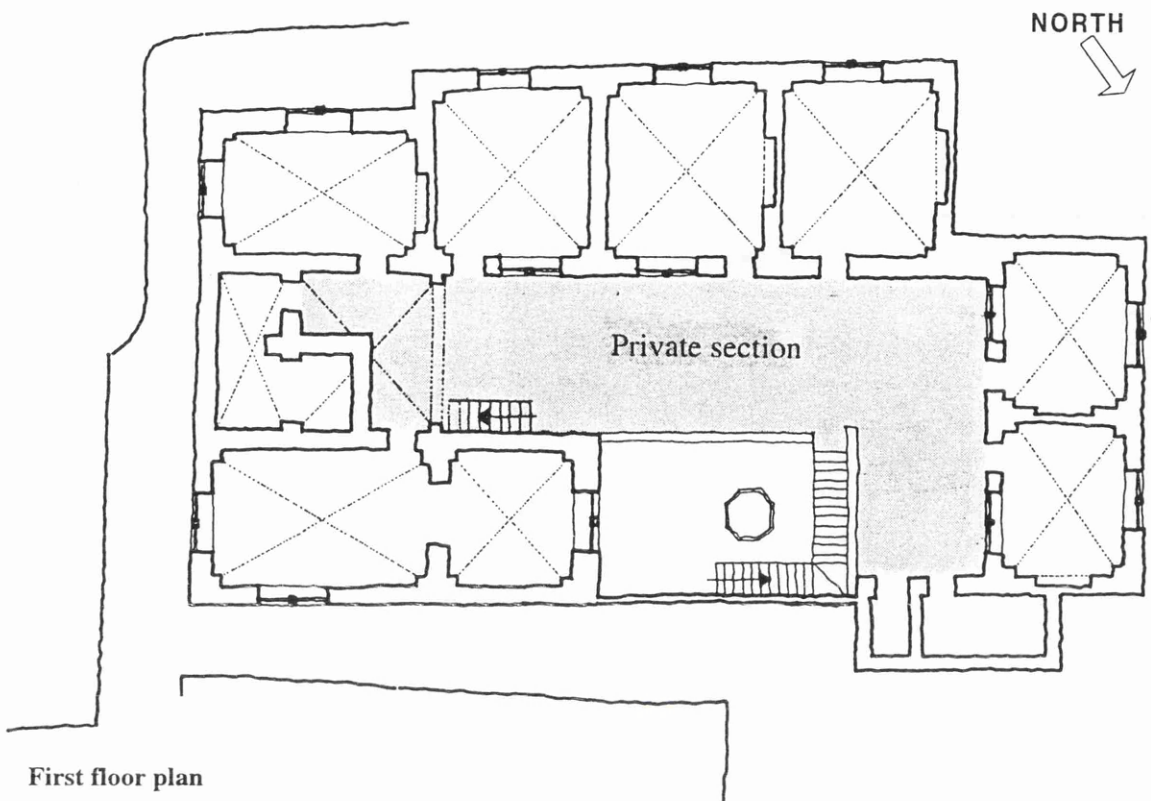


First floor plan



Ground floor plan
(Reproduced from survey drawings
by third year students of Al-Najah
university/ class 1991)

Figure 2: Example of the courtyard house in Palestine. Shaheen family house inside the old city of Nablus.



Digital images of Shaheen family house in Nablus (Scanned from photographs using a laser scanner)



Plate 1: The entrance elevation



Plate 2: Courtyard of the first floor (private section)

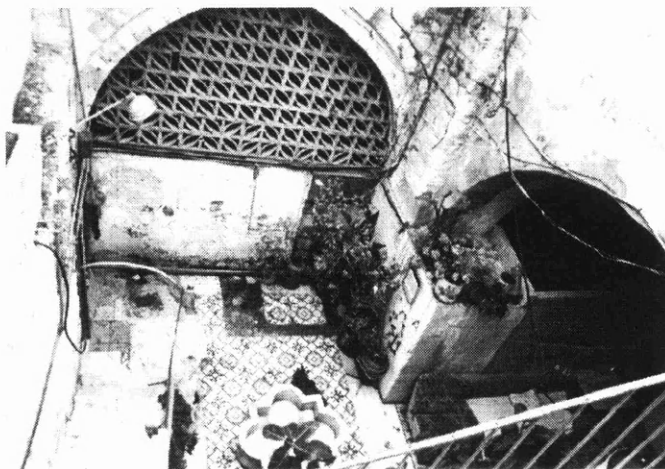
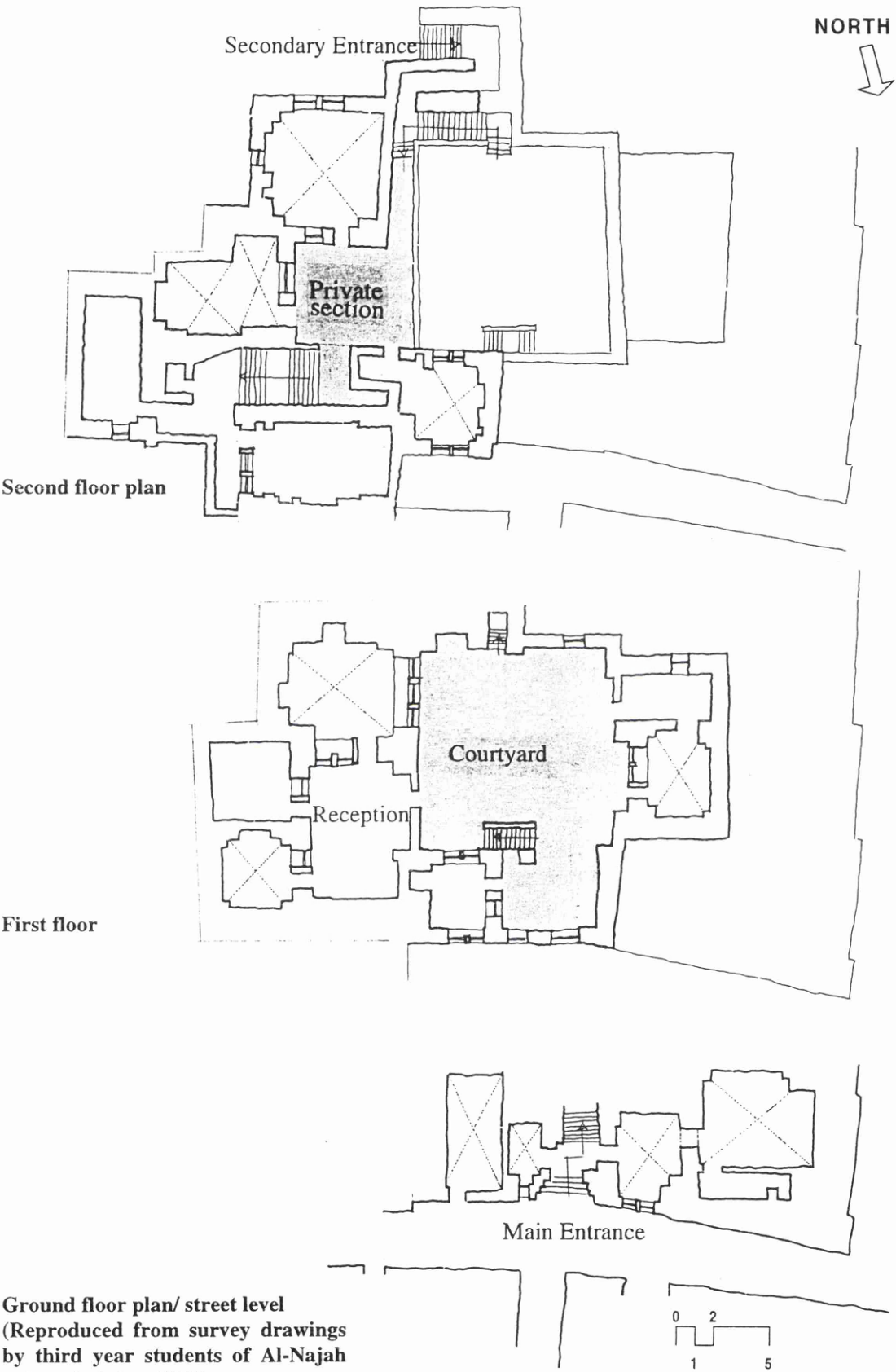
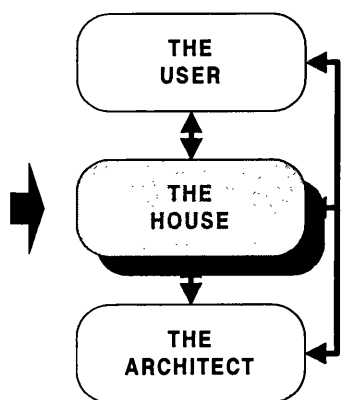


Plate 3: The entrance court on the ground floor level.

Figure 3: Example of the courtyard house in Palestine. Abdul-Hadi family house in the Qaryoun quarter in the old city of Nablus.



(Reproduced from survey drawings by third year students of Al-Najah university/ class 1991)



Appendix 3B

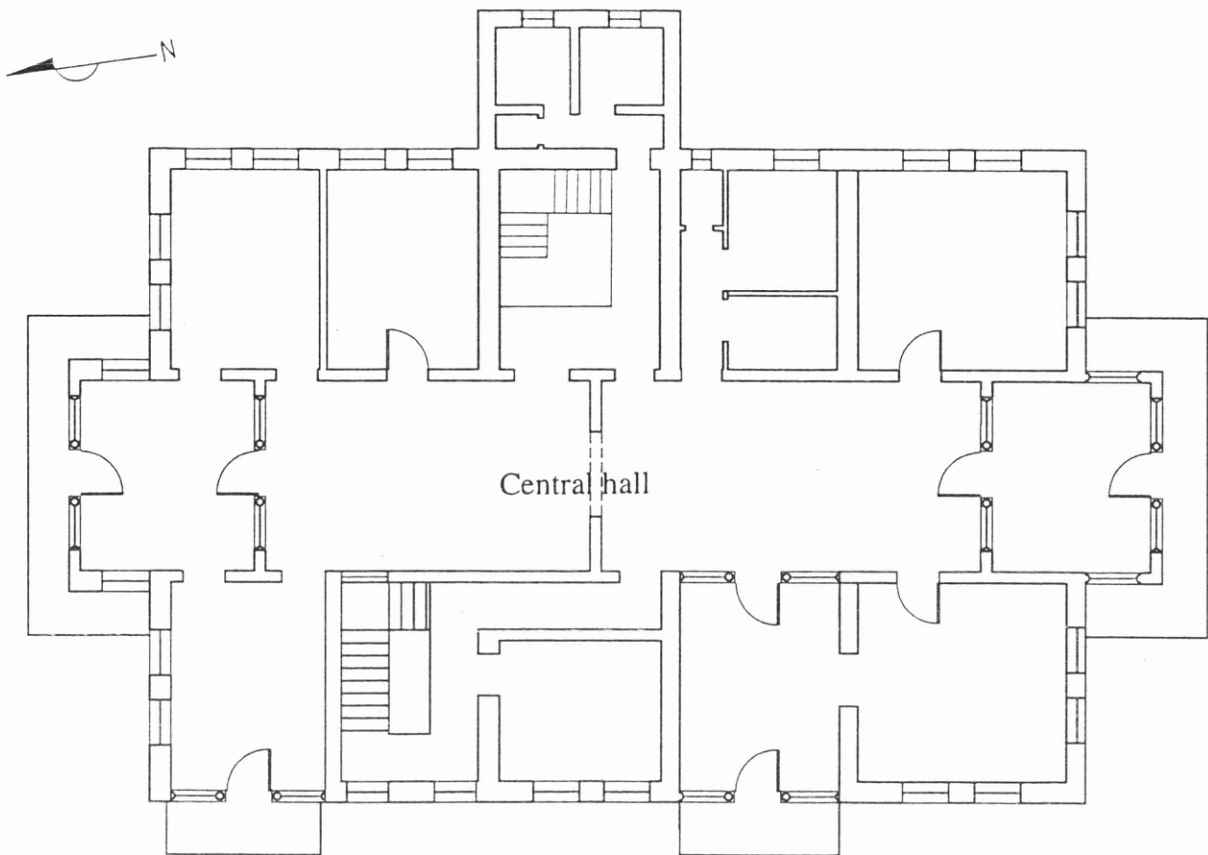
**The Colonial
(Central-Hall) House in
Palestine -Type B-:
Examples**

Appendix 3B presents four examples of the colonial, central-hall house in Palestine. Each of the four houses has a central hall directly approached from the outside and surrounded by rooms and spaces.

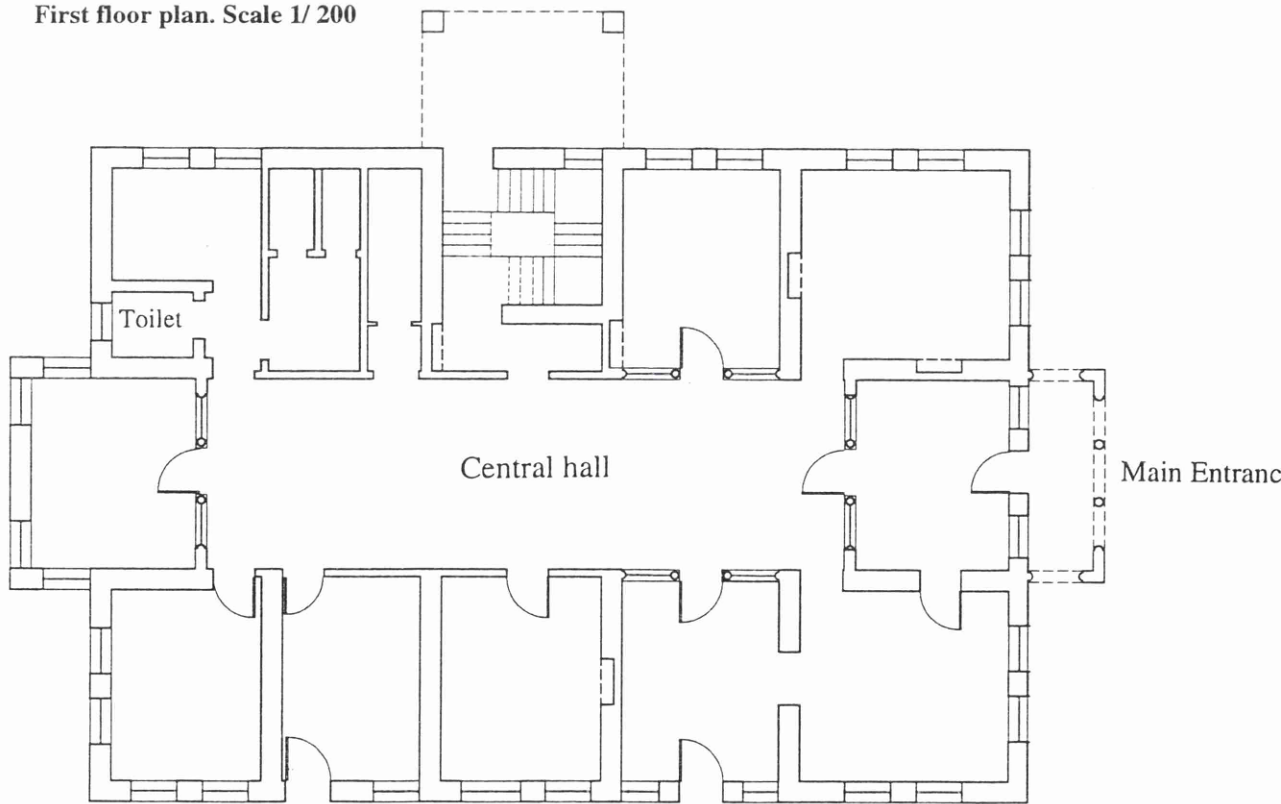
These houses differ slightly in their room arrangement (figure 2.4, *Chapter 2*), size and exterior design.

For more information about type B house refer to *Chapter 2*.

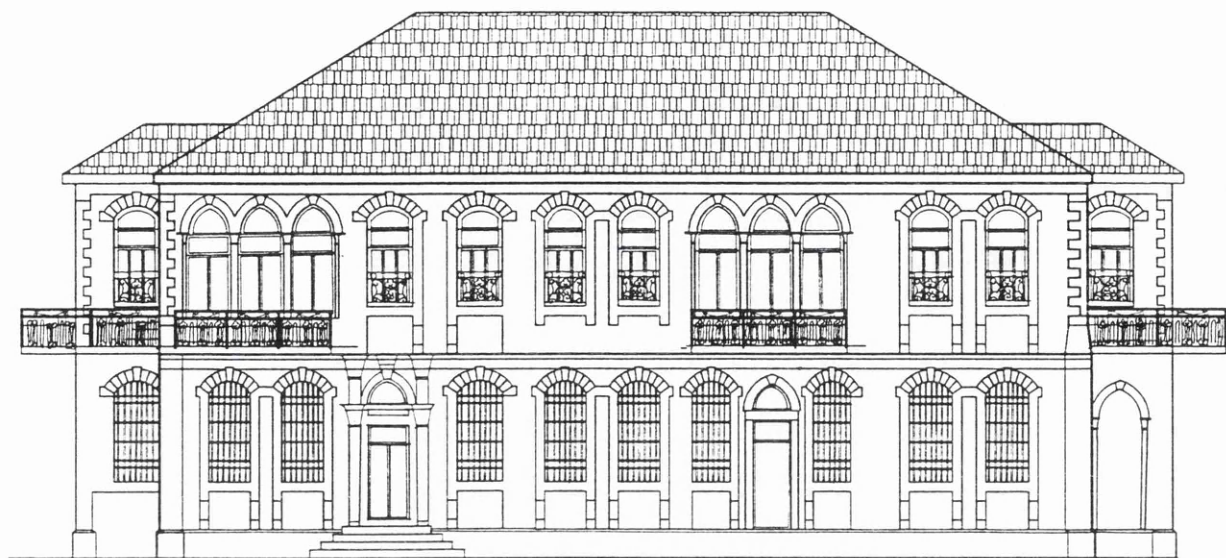
Figure 1: Example of the colonial, covered central-hall house in Nablus/ Palestine.



First floor plan. Scale 1/ 200



Ground floor plan. Scale 1/200

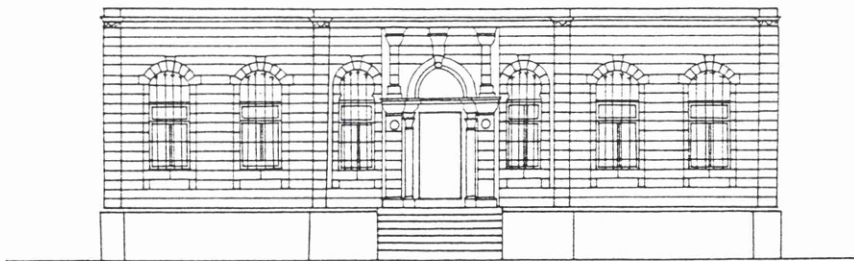
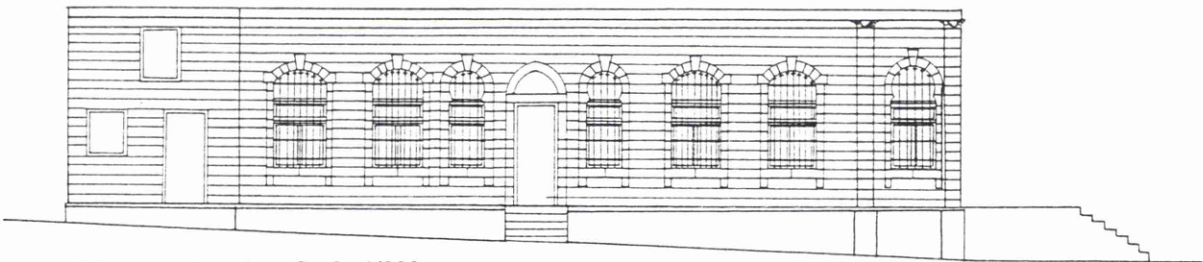
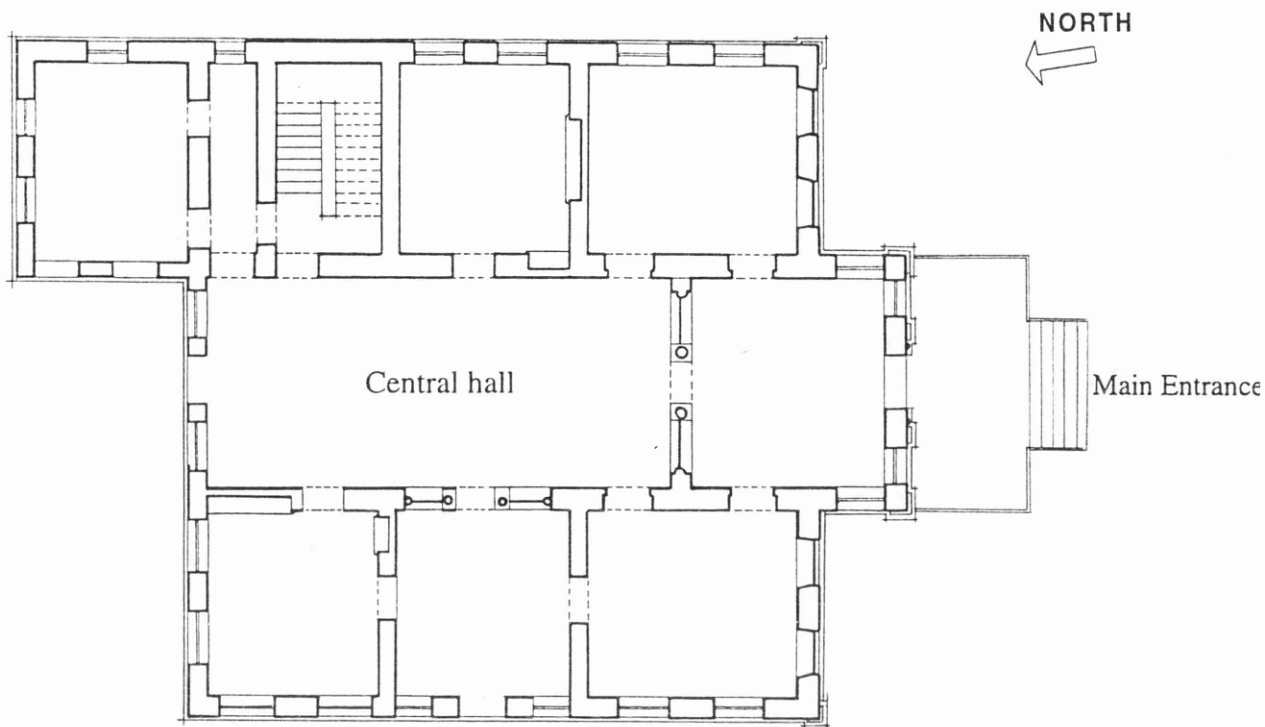


Western elevation. Scale 1/200



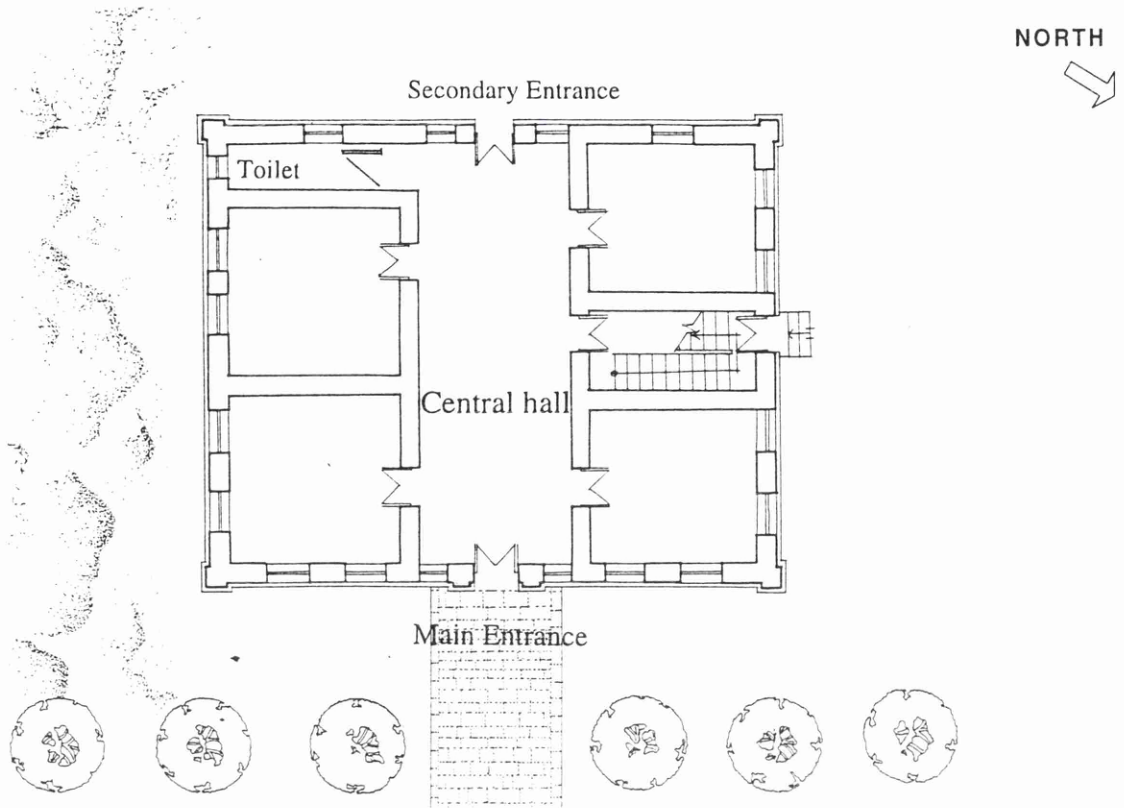
Southern elevation. Scale 1/200
Survey drawings by fourth year students/ class 1997, Al- Najah university/ Nablus.

Figure 2: Example of the colonial, covered central-hall house in Nablus/ Palestine.

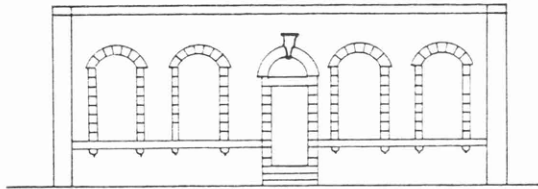


Survey drawings by fourth year students/ class 1997, Al- Najah university/ Nablus.

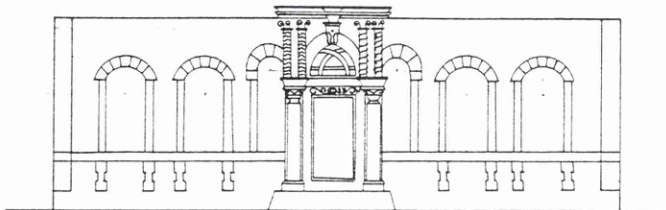
Figure 3: Example of the colonial, covered central-hall house in Nablus/ Palestine.



Ground floor plan. Scale 1/ 200



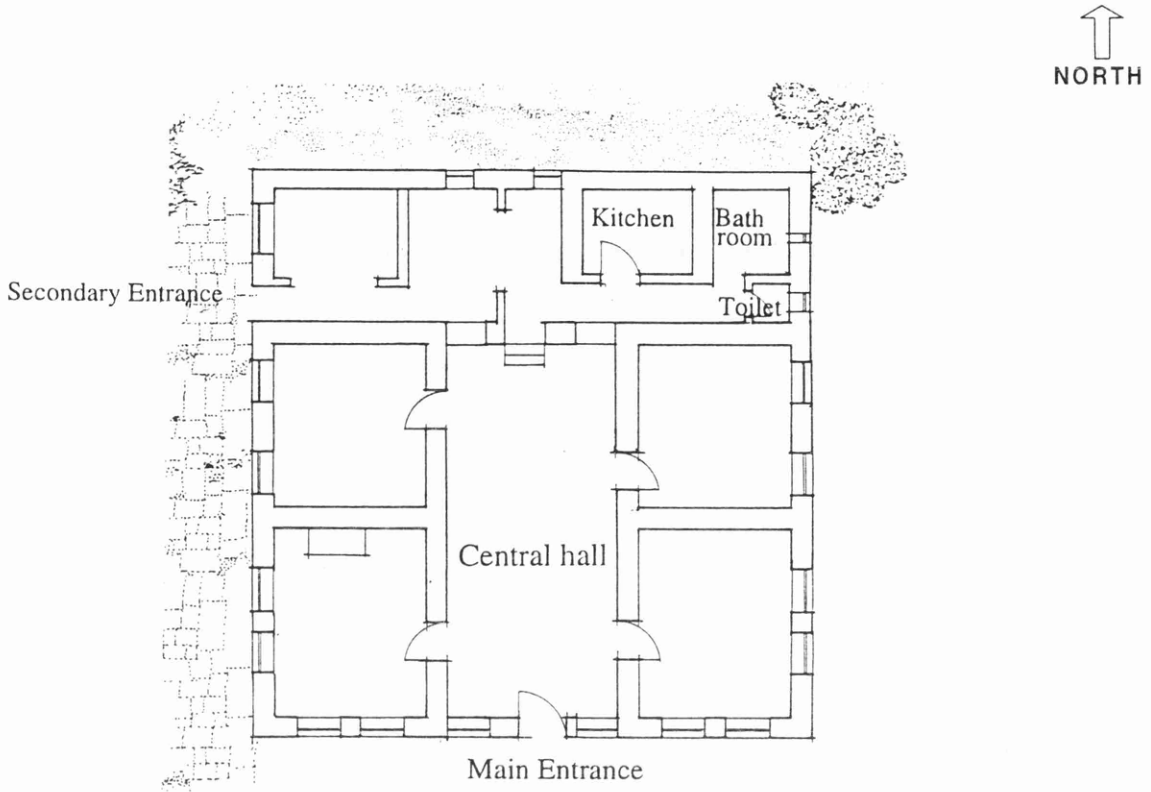
Western elevation. Scale 1/200



Northern elevation. Scale 1/200

Survey drawings by fourth year students/ class 1997, Al- Najah university/ Nablus.

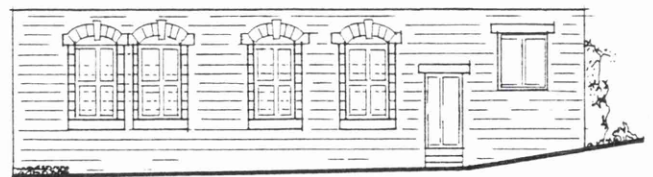
Figure 4: Example of the colonial, covered central-hall house in Nablus/ Palestine.



Ground floor plan. Scale 1/ 200



Eastern elevation. Scale 1/200

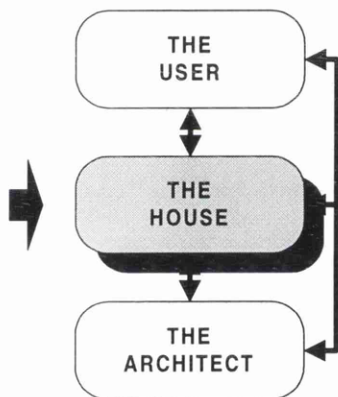


Western elevation. Scale 1/200



Southern elevation. Scale 1/200

Survey drawings by fourth year students/ class 1997, Al- Najah university/ Nablus.



Appendix 3C

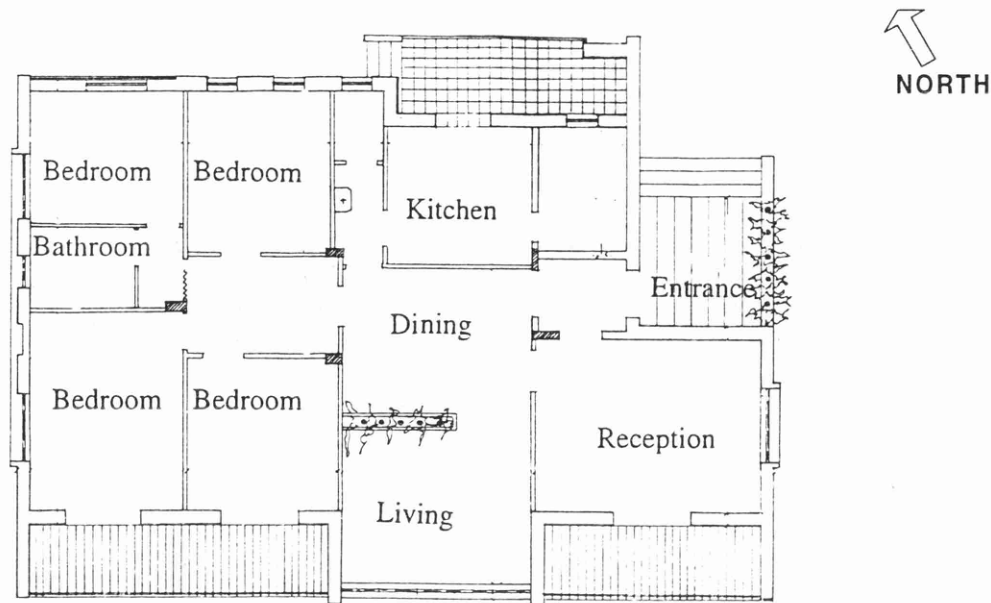
The Modern House in Palestine -Type C-: Examples

Appendix 3C introduces three examples of the modern house (type C) in Palestine. These houses were designed by architects and were built during the last 50 years.

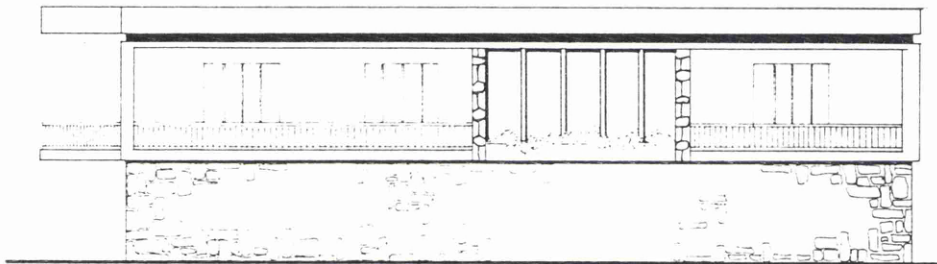
Example one (figure 1) was designed in the mid 60s, example 2 (figure 2) was designed during the early 80s and the third example (figure 3) was designed in the mid 90s.

For more information about the modern house in Palestine (type C) refer to *Chapter 2*.

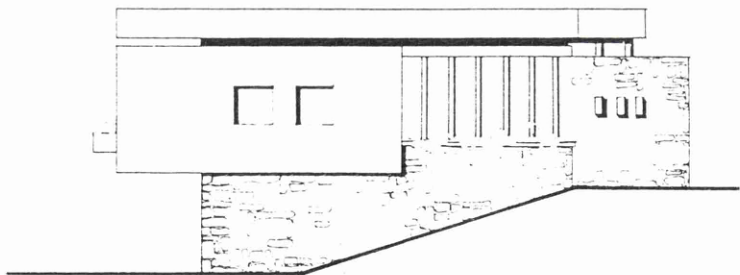
Figure 1: Example of the modern house in Palestine/ Nablus.



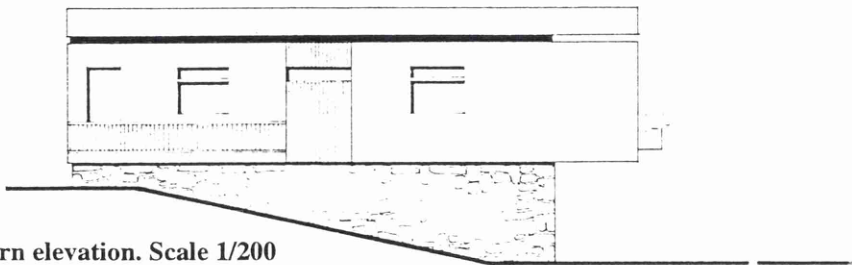
House plan. scale 1/200



Southern elevation. Scale 1/200

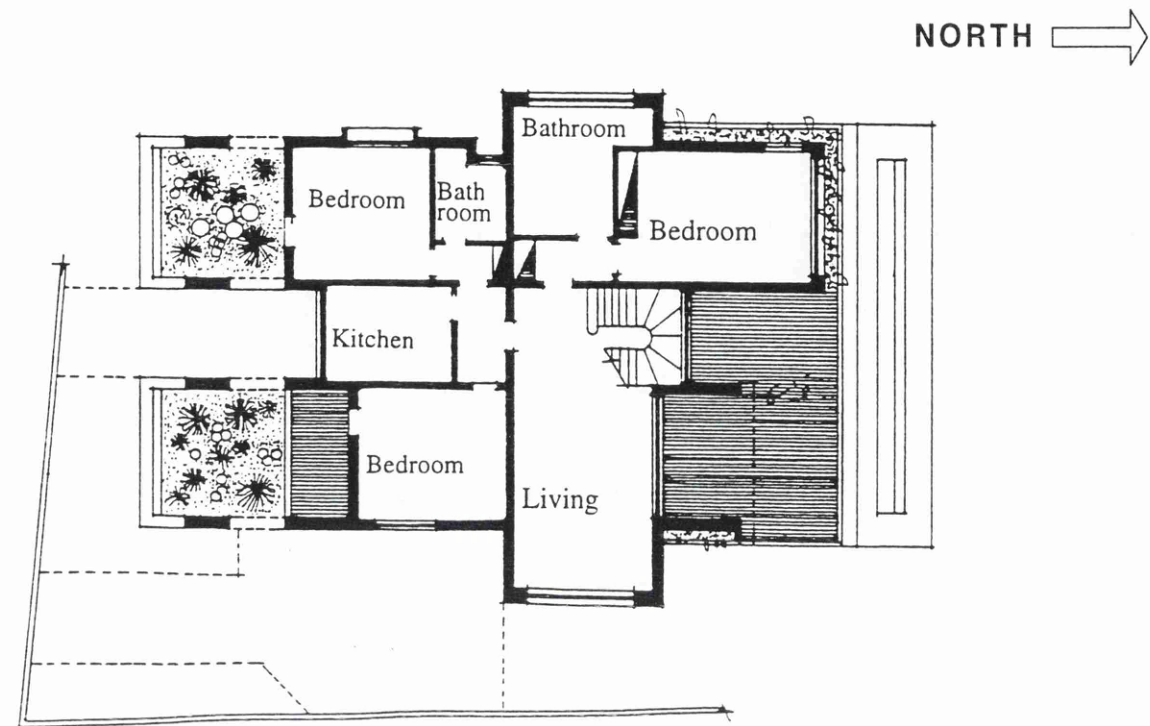


Eastern elevation. Scale 1/200

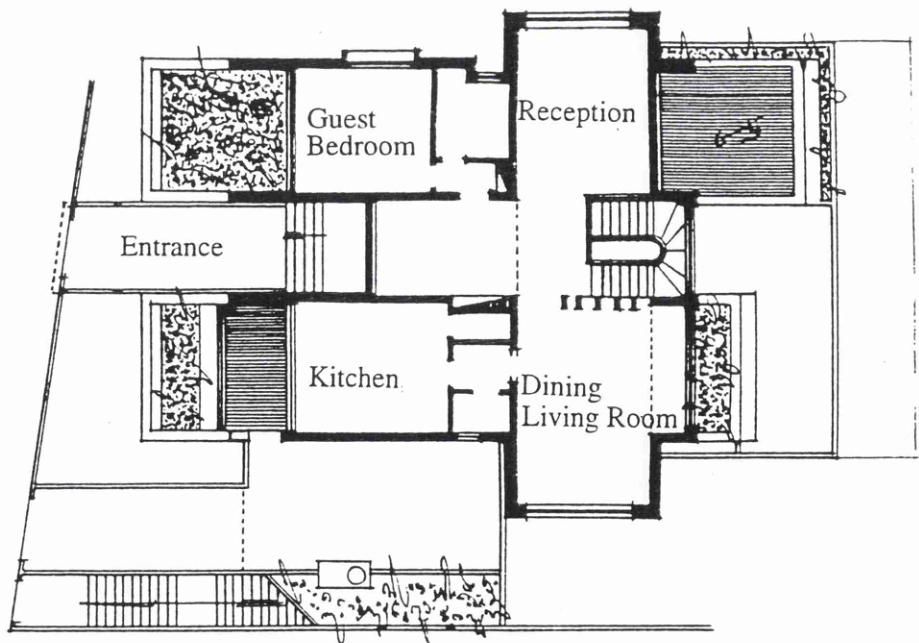


Western elevation. Scale 1/200

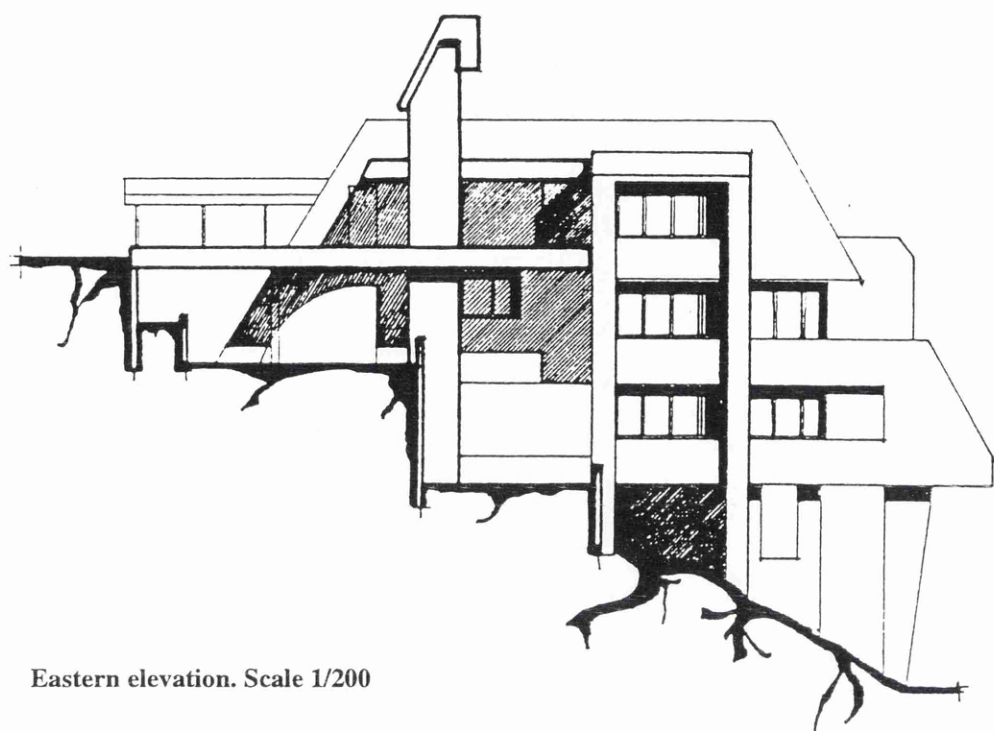
Figure 2: Example of the modern house in Palestine/ Nablus.



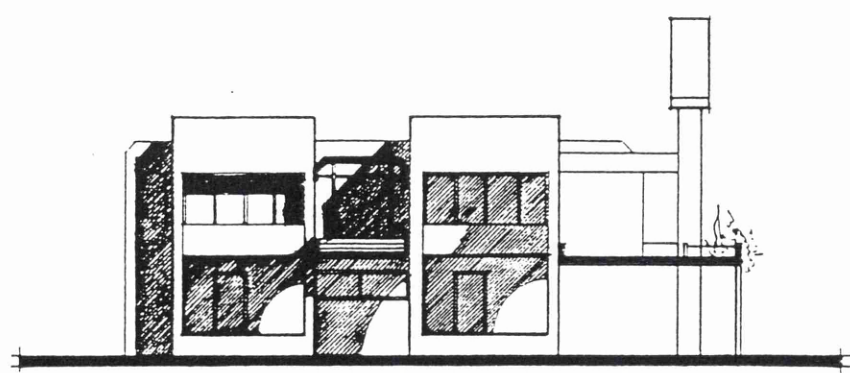
First floor plan. Scale 1/200



Ground floor plan. Scale 1/200.



Eastern elevation. Scale 1/200

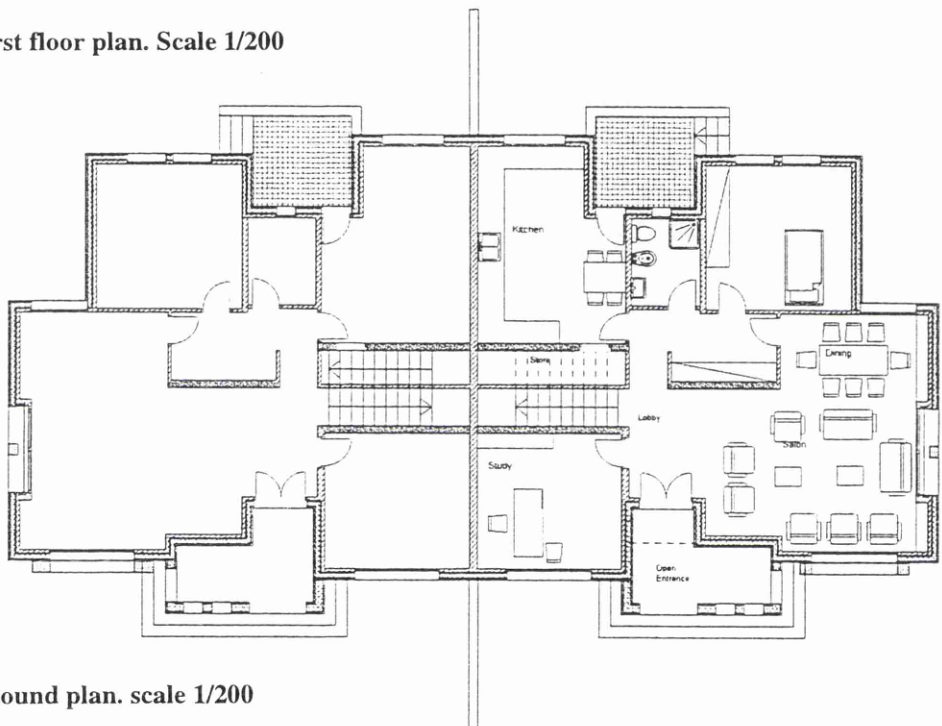


Southern elevation. Scale 1/200

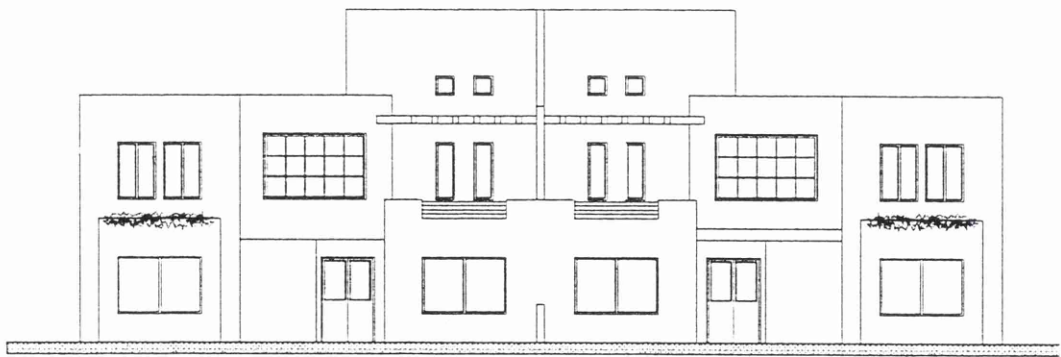
Figure 3: Example of the modern house in Palestine/ Nablus.



First floor plan. Scale 1/200



Ground plan. scale 1/200



Front elevation. Scale 1/200

Bibliography

BIBLIOGRAPHY

- ABBASI, M.(1990): *The History of Tuoqan Family in Nablus Mountain*, (in Arabic), Dar Al-Mashriq, Shafa Amir.
- ABDUL- JAWAD, S.(1990): "The Development of Palestinian National Struggle from the Beginning of the Zionist Settlement and Until the Division" (in Arabic), in *The Palestinian Society - forty years for the catastrophe and twenty one years for the occupation of the West Bank and Gaza strip*, Centre of Arabic Heritage, Al Amal Press, Jerusalem, 1990
- ABEL,C. (1982): "Living in a Hybrid World: The Evolution of Cultural Identities in the Developing Nations", *Design Studies*, No. 3, pp.127-132.
- ABEL,C. (1986): "Regional Transformation", in Davey (ed.): *The Architectural review*, Nov., pp. 37-43.
- ABU-LUGHOD, J.(1980): " Preserving the Living Heritage of Islamic Cities", in R.Hold (ed.), *Towards an Architecture in the Spirit of Islam*, Proceedings of Seminar One in the Series, Architectural Transformation in the Islamic World, held in Jakarta, Indonesia 1979, The Aga Khan awards, pp.61-66.
- ABU- LUGHOD, J.(1985): " The Continuing Expulsions From Palestine 1948- 1982", in *The Demographic Characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut
- AKBAR, J.(1988): *Crisis in the Built Environment: the Case of the Muslim City*, Concept Media, Singapore.
- AL-FAQIH, S.(1982): *Islamic Order in Architectural Space: One Religion's Cultural Influence on Space Morphology*, Unpublished Ph.D. Thesis, Strathclyde University U.K.
- AI-HATHLOUL, S.(1975): *Tradition Continuity and Change in the Physical Environment: The Arab Muslim City*, Ph.D. Thesis, Harvard University.
- ALEXANDER, C. , ISHIKAWA, S., SILVERSTEIN, M. (1977): *A Pattern Language: Towns, Buildings, Construction*, Oxford University Press, New York.
- ALEXANDER, C.(1979): *The Timeless Way of Building*, Oxford University Press, New York.
- ALLSOP, B.(1977): *A Modern Theory of Architecture*, Routledge & Kegan Paul, London.
- ALLSOP, B.(1974): *Towards a Humane Architecture*, London, Frederick Muller.
- ALOOSH, K (1985): "A General Outlook into the Socio- Economic Situation in the Occupied Territories and the Impact of Policies of the Israeli Occupation" (in Arabic), in *The Demographic characteristics of the Palestinian Society*, *The Arab Institute for training and statistical research*, Al- Nidal press, Beirut.
- AL-SABAHI, H. M.(1994): *The Architectural Transformation of Housing Patterns in the City of Sana'a, Yeman*, unpublished Ph.D. thesis, Architectural Association School of Architecture, London.
- ALSAYYAD, N.(1991): *Cities and the Caliphs: on the Genesis of Arab Muslim Urbanism*, Greenwood Press, Westport, Conn.
- ALSAYYAD, N. (1992): " Modelling Traditional Islamic Cities", *Mimar* Vol. 12, No.43 (June), pp. 26- 33.

- ALSAYYAD, N.(1996): " Islamic Architecture and Urbanism: Middle Eastern Perspective", *Built Environment*, Vol.22, No.2, pp.89- 90.
- ALSAYYAD, N.(1996): "The Study of Islamic Urbanism: An Historiographic Essay", *Built Environment*, Vol.22, No.2, pp.91- 99.
- ALSUWAYEH, W. (1985): *The impact of culture and Environment on Architectural Training, A Need Assessment Approach to Designing an Architecture Program for Kuwait, School of Engineering and Architecture*, Unpublished Ph.D. Thesis, The Catholic University of America.
- ANTONIOU, J. (1983): " Compatible Architecture in the Arab City", in A. Hutt (ed.), *Arab Architecture: Past and Present*, The centre for Middle Eastern and Islamic studies, University of Durham, England, pp. 45-48.
- ARKOUN, M. (1983): "Building and Meaning in the Islamic World", *Mimar*, No.8, (April- June), pp. 50-53.
- ARKOUN, M.(1986): " Islamic Culture, Modernity, Architecture", in A. Evin. (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.15-21.
- ARKOUN, M.(1989): " Current Islam Faces its Tradition", in I. Serageldin (ed.), *Space for Freedom: The Search for Architectural Excellence in the Muslim Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, pp.241-246.
- ARKOUN, M.(1990): " Point of View", *Mimar*, Vol. 10, No. 37, pp. 6-7.
- ATKINSON, R., BAGENAL, H.(1926): *Theory and Elements of Architecture*, Ernest Benn, London.
- BAHIRI, S. (1989): *Construction and Housing in the West Bank and Gaza*, WDBBP, The Jerusalem Post, Jerusalem.
- BAKER, A. M.(1990):" Education in the West- Bank Under the Israeli Occupation" (in Arabic), in *The Palestinian Society - forty years for the catastrophe and twenty one years for the occupation of the West Bank and Gaza strip*, Centre of Arabic Heritage, Al Amal Press, Jerusalem, 1990.
- BAUM. A., VALINS, S. (1977): *Architecture and Social Behaviour*, New Jersey, Lawrence Erlbaum associates.
- BERGER, M.(1963): *The New Metropolis In the Arab World*, Allied Publishers, New Delhi, London, New York.
- BLAKE,G.H., LAWLESS,R.I.(1980): *The Changing Middle Eastern City*, CROOM Helm, London.
- BONTA, J. P. (1979): *Architecture and its Interpretations* , London, Lund Humphries.
- BRADY, D.A. (1996): "The Education of an Architect: Continuity and Change", *JAE*, September 50(1), pp.32-49.
- BROADBENT, G. (1983): " Meaning in the Islamic Environment", in A. German (ed.) *Symposium Organised by the Collage of Architecture and Planning* 5-10 January 1980, King Faisal University , Dammam, pp. 183-199.
- BROADBENT, G. (1983): "An Architect Approach to Education", *Architectural Education*, 2, pp. 44-115.
- BROADY, M. (1968): *Planning for People* , London, The Bedford Square Press.

- BROWER, S. (1988): *Design in Familiar Places: What Makes Home Environments Look Good*, Praeger, New York, London.
- BROWN, C.L.(1973): *From Madina to Metropolis: Heritage and Change in the in the Near Eastern City*, The Darwin Press, Princeton, USA.
- BURCKHARDT, T. (HOBSON, P. trans.)(1976): *The art of Islam, Language and Meaning*, London.
- BURGOYNE, M. H. (1987): *Proposal for the Restoration and Conservation of the Old City of Nablus*, A report prepared for the municipality of Nablus, Nablus.
- BURNHAM, B. (1988): "Specialist Knowledge: Professionalism and the Discipline of Architecture", *JAE* 41 (Winter), pp.53-55.
- CANTACUZINO, S. (1970): *Modern Houses of the World*, Studio Vista Limited, Great Britain.
- CANTACUZINO, S. & BROWNE, K.(1984): "Aleppo: Bab El Faraj The importance of townscape in reconstruction", *Mimar* , No.12, April- June, pp. 24-31.
- CANTER, D., LEE, T. (ed.) (1974): *Psychology and the Built Environment*, England, Architectural Press
- CATANESE, A. J. (1989): "Bridging the Teaching / Practice Gap", *Architectural Record*, July, pp.47.
- CHALMETA, P.(1980): " Markets" in R.B. Serjeant (ed.), *The Islamic City*, UNESCO, Paris.
- CHANG, C.(1990): *Towards Culturally Identifiable Architecture*, Unpublished Ph.D. Thesis, Virginia Polytechnic Institute and State University.
- CHAPMAN, D. (1955): *The Home and Social Status* , London, Routledge and Kegan Paul Ltd.
- CHEN, K.(1993): "Environmental Affordance: A Theoretical Framework for Incorporating Some Behavioural Considerations in Residential Evaluation", *Forum*, Vol.2, July, University of Newcastle Upon Tyne, pp.57-64.
- CHFEE, R. (1977): " The Teaching of Architecture at the Ecole des Beaux-Arts", in A. Drexler (ed), *The Architecture of the Ecole des Beaux-Arts*, London, Martin Seecker & Warburg.
- CLARK, R.H., PAUSE, M.(1985): *Precedent in architecture*, Van Nostrand Reinhold Company Inc. New York.
- CLIPSON, C.(1992): "Contradictions and Challenges in Managing Desig", *JAE*, 45 (4), pp. 218-224.
- COBB,H (1985): "Architecture and University", *Architectural Record*, September, pp.43-51.
- COLLONS,P. (1955): "Architectural Education Tow Hundred Years Ago", *RIBA Journal*, 62(6), pp. 290-274.
- COLQUHOUN,A (1990): *Essays in Architectural Criticism*, The MIT Press, Cambridge.
- CORREA, C. (1982): "Open to Sky Space: Architecture in Warm Climate", *Mimar*, No.5, July- September, pp.31-35.
- CORREA, C.(1983): "Quest for Identity", in *Exploring Architecture in Islamic Cultures I: Architecture and Identity*, Proceedings of the Regional Seminar in the series Exploring Architecture, the Aga Khan Award for Architecture, Kuala Lumpur, Malaysia, July 25-27, pp.11-13.

- CORREA, C.(1989): *The New Landscape: Urbanisation in the Third World*, Butterworth Architecture, America, Europe.
- CORREA, C.(1989): "Scanning the Options", in I. Serageldin (ed.), *Space for Freedom: The Search for Architectural Excellence in the Muslim Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, pp.267-273.
- COSTELLO,V. F. (1977) : *Urbanisation in the Middle East* , Cambridge University Press, Cambridge.
- CRESWELL, K.A.C., ALLAN, J.W.(1989): *Early Muslim Architecture*, Scholar Press, Great Britain.
- CROSBIE,M. J.(1987): " School Reflects a Local Culture", *Architecture*, 76(8), pp.52-59.
- CROWE, N. A. (1984): " Studies in Typology", *JAE* 38(Fall), pp.10-13.
- CROWE,N.A., & HURTT, S.W. (1986): "Visual Notes and the Acquisition of Architectural Knowledge", *JAE*, 39(3), pp. 6-16.
- CURTIS, W.J. (1986): "Towards an Authentic Regionalism", *Mimar*. No.19, January-March, pp. 24-31.
- DANBY, M.(1983): "Architectural Education in Africa and the Middle east", *Architectural Education*, No. 2, pp.15-30.
- DAVEY, P. (1989): "Profession or Art?", *Architectural Review*, 185(1109), pp. 59-66.
- DEPARTMENT OF THE ENVIRONMENT (1978): *Housing Appraisal Kit: A Complete Social Survey Package*, Housing Development Directorate, HMSO, London.
- DILNOT, C.(1982): "Design as a Socially Significant Activity: An Introduction", *Design Studies*, No.3, Vol.3, pp.139-146.
- DOSHI, B.(1986): "Expressing an Architectural Identity", *Mimar*, No.19, January-March, pp. 24-31.
- DRAPER, J.(1977): " The Ecole des Beaux-Arts and the Architectural Profession", in S. Kostof (ed.), *The Architect: Chapters in the History of the Profession*, Oxford University Press, New York, pp.209-237.
- DROSTE, M. (1993) : *Bauhaus*, The Bauhaus- Archive Museum, Berlin.
- DUTTON, T. A. (1991): *Voices in Architectural Education: Cultural Politics and Pedagogy*, South Hadley, Bergin & Garvey.
- ELARABY, K.M.G. (1996): " Neo-Islamic Architecture and Urban design in the Middle East: From Threshold to Adaptive Design", *Built Environment*, Vol. 22, No.2, pp.139-150.
- ELISSEEFF, N.(1980): " Physical Lay-out " in Serjeant ed. *The Islamic City*, UNESCO, Paris.
- EL-KHOLY, M.B. (1975): *Climatic Influences and Arab Architecture*, (in Arabic) Beirut Arab University, Lebanon.
- EL-WAKIL, A.W(1984): "The Future of the Arab House", *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 91-98.
- ESHERICK, J. (1984): "The Profession of Architecture", *JAE*, 38(1), pp. 26-29.
- ETTINGHAUSEN, R. (1973): "Muslim Cities: Old and New", in C.L. Brown, (ed.) *From Madina to Metropolis: Heritage and Change in the in the Near Eastern City*, The Darwin Press, Princeton, USA, pp.290-317.

- FADAN, Y. (1983): "Traditional Houses of Makka: The Influence of Socio-Cultural Themes Upon Arab-Muslim Dwellings", in A. German (ed.) *Symposium Organised by the Collage of Architecture and Planning* 5-10 January 1980, King Faisal University, Dammam, pp.295-326
- FARMER, J. D., WEISS, G. (1971): *Concepts of the Bauhaus*, Harvard University, Cambridge, Massachusetts.
- FATHY, H.(1960): " Planning and Building in the Arab Tradition: The Village Experiment at Gourna ", in Berger (ed.) *The New Metropolis in the Arab World*, Allied Publishers, New Delhi, London, New York.
- FATHY,H.(1973): "Constancy, Transposition and Change in the Arab City", in C.L. Brown (ed.), *From Madina to Metropolis* , The Darwin Press, Princeton, New Jersey.
- FATHY, H. (1973): *Architecture For the Poor* , The University of Chicago Press, USA.
- FATHY,H.(1986): *Natural Energy and Vernacular Architecture: Principles and Examples with Reference to Hot Arid Climates*, University of Chicago Press, Chicago, USA.
- FETHI, I. (1997): "The Role of Architectural Heritage and Urban Reconstruction Palestine", in A. B. Zahlan (ed.), *The reconstruction of Palestine: Urban and Rural Development*, Kegan Paul International, London, New York, pp.392-404.
- FILSON, R. (1985): "Can Schools Span the Gap To Practice", *Architectural Record*, Nov., pp.59-63.
- FISHER, W.B.(1978): *The Middle East: A Physical, Social and Regional Geography*, Methuen and Co. Ltd., 7th edition, Cambridge, Great Britain.
- GAINES, M.C.(1980): " Teaching a Contextual Architecture", *JAE*, 33(3), pp. 21-26.
- GARDINER, S. (1975): *Evolution of the House*, Constable and company Limited, Great Britain.
- GAZZARD, R.(1983): " The Arab House in its Geocultural Context", in A. Hutt (ed.), *Arab Architecture: Past and Present*, The Centre for Middle Eastern and Islamic Studies, University of Durham, England.
- GHISELIN, B.(1955): *The Creative Process*, Mintor, New York.
- GIEDION, S. (1958) : *Architecture You and Me*, Harvard University Press, Cambridge, Massachusetts.
- GRABAR, O.(1969): "The Architecture of the Middle Eastern City from Past to Present: The Case of the Mosque", in I. Lapidus (ed.), *Middle Eastern Cities*, United California Press, Berkeley, Los Angeles.
- GROPIUS, W. (1935): *The New Architecture and the Bauhaus* (trans. Morton Shand P.), Faber, London
- GROPIUS, W.(1955):*Scope of Total Architecture*, George Allen & Unwin LTD, London. .
- GROPIUS, W. (1983): " The Bauhaus", *Architectural Education*, 1, pp. 53-79.
- GUITON, J. (ed),GUITON, M. (trans.)(1981): *The Ideas of Le Corbusier, On Architecture and Urban Planning*, George Braziller, New York.
- GULICK, J.(1969): "Village and City: Cultural Continuities in Twentieth Century Middle Eastern Cultures" in I. Lapidus (ed.), *Middle Eastern Cities*, , United California Press, Berkeley, Los Angeles.

- HALL, E. (1966): *The Hidden Dimension: Man's Use of Space in Public and Private*, The Bodley Head, London.
- HAMDI, N.(1991): *Housing Without Houses, Participation, Flexibility, Ennoblement*, Van Nostrand Reinhold, New York.
- HAMDI, N. (1997): "Housing Alternatives: Lessons From Experience", in A.B. Zahlan, (ed.), *The reconstruction of Palestine: Urban and Rural Development*, Kegan Paul International, London, New York, pp.405-420.
- HEIBERG, M. BRUMBORG, H. et al. (1994) : *Palestinian Society in Gaza, West Bank and the Arab Jerusalem: A Survey of Living Conditions*. (in Arabic, translation), Institute of Palestinian Studies Beirut.
- HEIMSATH, C.(1977): *Behavioral Architecture: Towards an Accountable Design Process*, McGraw- Hill, New York.
- HEWITT, M.A.(1994): "Architecture for a Contingent Environment", *JAE*, 47(4), pp. 197-209.
- HILLENBRAND, R.(1983): "Islamic Architecture and Urbanism" ,in A. German (ed.) *Symposium Organised by the Collage of Architecture and Planning* 5-10 January 1980, King Faisal University , Dammam, pp. 17-28.
- HILLENBRAND, R.(1994): *Islamic Architecture*, Edinburgh University Press, Edinburgh.
- HILLIER, B. & HANSON, J.(1984): *The Social Logic of Space*, Cambridge University Press, New York.
- HILLIER, B.(1996): *Space is the Machine: A Configurational Theory of Architecture*, Cambridge University Press, Great Britain.
- HOAG, J.D.(1977): *Islamic Architecture*, Harry N Abrams Inc, New York.
- HOLOD, R. (ed)(1978): *Architectural Transformation in the Islamic World, Proceeding of Seminar one* , held at Aiglemont, Gouvieux, France, Aga Khan Award for Architecture.
- HOLD, R. (1983): *Architecture and Community: Building in the Islamic World Today*, Aperture, New York, pp 14-20.
- HOURLANI, A.H. (1970): "The Islamic City in Light of Recent Research", in Hourani and Stern (eds.) *The Islamic City*, Bruno Cassirer Publisher Ltd, Oxford.
- HUET, B.(1983): " The Modernity in a Tradition- The Arab Muslim culture of North Africa", *Mimar*, No.10, October- December, pp. 49-59.
- HUTT, A. (ed.)(1983): *Arab Architecture: Past and Present*, The Centre for Middle Eastern Studies, University of Durham, England.
- INKELES, A.(1964): *What is Sociology? An Introduction to the Discipline and Profession*, Prentice Hall, New Jersey.
- IQBAL, M. (1992): " Society and the Modern World" in Robinson, F., *Atlas of the Islamic World Since 1500*, Phaidon, Oxford.
- ISSAWI, C.(1969): "Economic Change and Urbanisation in the Middle East" in I. Lapidus (ed.) *Middle Eastern Cities*, United California Press, Berkeley, Los Angeles.
- JAYAWARDENE, S.(1986): "Bawa: A Contribution to Cultural Regeneration", *Mimar*, No.19,(Jan.- March), pp. 47- 49.
- JONES, M.A.(1989): *Models of Educating Architects in this Century and the Next*, Unpublished Ph.D. Thesis, Georgia Institute of Technology, College of Architecture.

- KAHN, A.(1994): "Representation and Misrepresentation; On Architectural Theory", *JAE*, 47(3), pp.162-167.
- KALBUNEIH, S. (1992): *History of the City of Nablus 2500 BC- AD 1918*, (in Arabic) Nablus.
- KHADER, B.(1984): "Palestinian Demography (1900- 2000) The Stake and the Challenge", in *The Demographic characteristics of the Palestinian Society*, The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut
- KHAN, H.U. (ed.)(1983): "Sana'a Seminar on Modernity and Tradition", *Mimar*, 9July-Sep. , pp.54-58.
- KHAN, H.U. (1987): "Architectural Education; Learning From Developing Countries", in I. Serageldin (ed.), *Space for Freedom: The Search for Architectural Excellence in the Muslim Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, pp.293-295.
- KHAN, K. (1986): "The Islamic Debate", *Mimar*, No. 19(Jan.- March), pp. 41-44.
- KHOURI, J. et al (1985): *Housing in the West Bank and Gaza*, Engineering association, Jerusalem.
- KING, A. D. (ed.) (1980): *Building and Society: Essays on the Social Development of the Built Environment*, Routledge & Kegan Paul, London.
- KOSTLER, A. (1964): *The act of Creation*, Hutchinson, London.
- KOSTOF, S.(1986): "The Education of the Muslim Architect", in A. Evin. (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.1-7.
- KOSTOF, S.(1991): *The City Shaped* , Thames and Hudson, London.
- KOSTOF, S.(1992): *The City Assembled*, Thames and Hudson, London.
- KUBAN, D.(1983): "Modern Versus Traditional: A False Conflict", *Mimar*, No.9 (July- Sept.), pp. 54-58.
- KUBAN, D. (1983): "Conservation of the Historic Environment for cultural Survival", in R. Hold (ed.) *Architecture and Community: Building in the Islamic World Today*, Apture, New York, pp.1-8.
- KULTERMANN, U.(1982): "Contemporary Arab Architecture", *Mimar*, No. 4(April-July), pp. 56-61.
- LANG, J.(ed.)(1974): *Designing for Human Behaviour: Architecture and the Behavioural Sciences*, Dowden Hutchinson & Ross Inc., USA.
- LANG, J.(1987): *Creating Architectural Theory: The Role of the Behavioural Sciences in Environmental Design*, Van Nostrand Reinhold Company, New York.
- LAPIDUS, I.M.(1969): *Middle Eastern Cities*, United California Press, Berkeley, Los Angeles.
- LAWLESS, R. (1984): "Planners and the People: a Case Study of Housing in Tunis", in *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 33-40.
- LESIUK, S.(1983): "Landscape Planning for Energy Conservative Design in the Middle East", in A. German (ed.) *Symposium Organised by the Collage of Architecture and Planning* 5-10 January 1980, King Faisal University , Dammam, pp.215-232.

- LIM, W.S.W. (1990): *Cities For People*, Singapore, Select Book Pte Ltd.
- MACEWEN, M.(1983): "The Cambridge Conference", *Architectural Education*, No.1, pp. 99-104.
- MAKIYA, M. (1984): " The Arab House: An Historical Review ", *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 17-14.
- MAKIYA, M.S. (1984): "An Appreciation of Arab-Islamic Architecture", in *Focus on Arab Architecture: Past and Present*, A record of a four week Exhibition and Associated Functions held in London on 24 January- 17 February 1984 by the Arab- British Chamber of Commerce, UK, pp.91-96.
- MANSUR, P.(1984): "Environment and Values; the Islamic Perspective", in Sardar (ed.), *The Touch of Midas*, Manchester University Press.
- MA'OZ, M.(ed.) (1975) : *Studies on Palestine During the Ottoman Period* , The Magnes Press, Jerusalem.
- MARC, O.(1977): *Psychology of the House*, Thames and Hudson, London
- MARMOT, A. F. & SYMES, M. (1985): "The Social Context of Design; A Case Problem Approach", *JAE*, 38(Summer), pp. 27-31.
- MARTIN, G.(1984): "Building in the Middle East Today- in Search of a Direction", in *Focus on Arab Architecture: Past and Present*, A record of a four week Exhibition and Associated Functions held in London on 24 January- 17 February 1984 by the Arab- British Chamber of Commerce, UK, pp.60-63.
- MARTIN, L. (1967): " Architects' Approach to Architecture", *RIBA Journal*, 74(5), pp.191-201.
- MAXWELL,R. (1983) : "The Two Theories of Architecture", *Architectural Education* (1), pp.113-124.
- MCGILVRAY, D.F. (1992): " The proper Education of Musicians and Architects", *JAE*, 46(2), pp. 87-94.
- MCSHEFFREY, G. R. (1985): "Construction is Essential to the Design Process", *Architectural Record*, June, pp. 55-57.
- MEISS, P. V.(1986): *Elements of Architecture*, London, Fand FN Spon.
- MICHELL, G.(1978): *Architecture of the Islamic World: Its History and Social Meaning*, Thames and Hudson, London, and William Morrow, New York.
- MIKELLIDES, B. (ed) (1980): *Architecture for People*, London, Studio Vista
- MORRIS, A.E.J.(1994): " Islamic Cities of the Middle East " , in *History of Urban Form*, Longman Scientific & Technica, England, pp.365- 401.
- MOUSAWI, S.(1991): "Synthesis: Towards a Tradition- Based Architecture", *Mimar*, No. 40 (September), pp. 31-35.
- MOUSTAADER, A.(1985): "Gourna: The Dream Continued", *Mimar* no.16, April-June, p.45-59.
- MUJAHED. M.K. (1985): "Some of the Demographic, Economic Indications for the Palestinian Arabs in the Occupied Territories" (in Arabic), in *The Demographic characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, Al- Nidal press, Beirut.
- MUMTAZ, K.K. (1986): " The Islamic Debate", *Mimar*, No.19, January- March, pp. 41-44.
- MUSALLAM,B.(1983): *The Arabs: A Living History*, Collins/ Harvill, London.

- MUSY, G. (1980): "L' Ecole des Beaux-Arts", *Architectural Design*, 50(1/2), pp. 31-32.
- NALBANTOGLU, G.B. (1993): "Between Civilisation and Culture: Appropriation of Traditional Dwelling Forms in Early Republican Turkey", *JAE*, 47/2, pp. 66-74.
- NORBERG- SCHULZ, C. (1966) : *Intentions in Architecture*, Scandinavian University Books, Oslo.
- NORBERG- SCHULZ, C. (1970): "Meaning in Architecture", in C. Jenks, C. & G Braid (eds.) *Meaning in Architecture*, Barrie & Jenkins, London, pp.216-229
- NORBERG- SCHULZ, C. (1980): *Genius Loci: Towards a Phenomenology of Architecture*, Rizzoli, New York.
- NORBERG- SCHULZ, C. (1984): *The Concept of Dwelling: on the Way to Figurative Architecture*, Rizzoli, New York.
- NORBERG- SCHULZ, C.(1986): "The Architecture of Unity", in A. Evin. (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.8-14.
- O'CONNOR, J. M. (1985): *The Holy Land- An archaeological Guide from Earliest Times to 1700*, Steimatzky Ltd., Great Britain.
- OLIVER, P. (ed.) (1969): *Shelter and Society*, Barrie & Rockliff, Great Britain.
- OLIVER, P. (ed.) (1975): *Shelter, Sign & Symbol*, Barrie & Jenkins, London.
- OLIVER,P. (1983): "Perfect for Need- Vernacular Architecture in Education", *Habitat International*, 7(5/6), pp.337-383.
- OZCAN, S.(1986): " An Overview of Architectural Education in Islamic Countries", in A. Evin. (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.104-111.
- OZCAN, S. (1989): "Education of Architects in the Middle East", *Open House International*, 14(2), pp. 22-28.
- OZCAN, S.(1989): " Regionalism within Modernism", in I. Serageldin (ed.), *Space for Freedom: The Search for Architectural Excellence in the Muslim Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, pp.279-282.
- PAPANEK, V.(1971): *Design for the Real World*, Human Ecology and Social Change, Thames and Hudson, London.
- PORTER, W. (1989): " Technology Form and Culture in Architecture Misconception and Myth", in I. Seragelden (ed.) *Space for Freedom: The Search for Architectural Excellence in Moslem Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, Boston, pp.288-292.
- POWELL,R.(ed)(1982): *Architecture and Identity*, Published for the Aga Khan Award for Architecture, Concept Media, Singapore.
- POWELL,R (ed) (1987): *Regionalism in Architecture -Exploring Architecture in Islamic Cultures 2*, Proceedings of the Regional Seminar in the series " Exploring Architecture in Islamic Cultures", Concept Media, Singapore.

- PRIZEMAN, J.(1975): *Your House: The Outside View*, Hutchinson and Co., London
- PRUSSIN, L. (1988): "The Conceptual Environment", *Mimar*, No. 27 (March), pp.54-59.
- RABINOWITZ, H.Z.(1979): "Post Occupancy Evaluation", in J.C. Snyder & A.J. Catanese (eds.) *Introduction to Architecture*, McGraw- Hill Inc., New York.
- RAPOPORT, A. (1976): *The Mutual Understanding of People and their Built Environment*, Mouton Publishers, Paris.
- RAPOPORT, A.(ed) (1977): *Human Aspects of Urban Form*, Pergamon Press, Oxford, New York.
- RAPOPORT, A.(1980): " Culture, Site-Layout and Housing", *Architectural Association Quarterly*, Vol.12, No.1, pp.4-7.
- RAPOPORT, A. (1982): *The Meaning of the Built Environment*, London, SAGE Publication.
- RASMUSSEN, S.E. (1980): *Experiencing Architecture*, The MIT Press, Cambridge.
- REILLY,J.J.N. (1987): *Better Briefing Means Better Buildings*, Building Research Establishment, Department of the Environment, Watford, UK.
- RENO,J. (1992): "Constructing Beginnings: A Role for Building Technology in Architectural Design", *JAE*, 45(3), pp.161-170.
- ROBINSON, F. (1992): *Atlas of the Islamic World Since 1500*, Phaidon, Oxford.
- ROBINSON, J.W. (1990): "Architectural Research; Incorporating Myth and Science", *JAE*, 44(4), pp. 20-32.
- ROSENTHAL, F. (1966): "Muslim Definition of Knowledge", in Leiden, C.(ed), *Conflict of Traditionalism and Modernity in the Muslim Middle East*, University of Texas Press, Astin, Texas.
- ROWE, P. G. (1987): *Design Thinking*, MIT Press, Cambridge, Massachusetts.
- ROWNTREE, D.(1981): *Statistics Without Tears: A Primer for Non-Mathematicians*, Penguin books, England.
- RYBCZYNSKI, W. (1986): *Home: A Short History of an Idea*, Penguin Books, USA.
- RYLE, G. (1975): *The Concept of Mind*, Hutchinson, London.
- SALEH, S.A. (1990): "The Economic Situation in the West- Bank and Gaza Strip", (in Arabic), in *The Palestinian Society - forty years for the catastrophe and twenty one years for the occupation of the West Bank and Gaza strip*, Centre of the Arabic Heritage, Al Amal Press, Jerusalem.
- SALIYA, Y. (1986): "Notes on Architectural Identity in Cultural Context", *Mimar* (19), January, 32-33.
- SAMHA, M.(1984): "The Demographic Changes in Palestine, A Study in the population Growth and the Demographic Struggle" (in Arabic), in *The Demographic characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut.
- SANTELLI, S.(1985): " Self- Built Urban Housing, Rabat and Tunis", *Mimar*, No.17, July- Sept., pp.41-48.
- SANTELLI, S., BADRAN, R., CURTIS, W.J.R., ABDUL- HALIM, H., EL-WAKIL, A (1989): "On Creativity, Imagination, and the Design Process, in I. Serageldin (ed.), *Space for Freedom: The Search for Architectural Excellence in the Muslim Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, pp.228-239.

- SAUNDERS, W.S. (1987): "What Kind of Practice Architects Want?", *Architectural Record*, July, 45.
- SCANLON, G.T. (1970): "Housing and Sanitation: Some Aspects of Medieval Islamic Public Service", in Hourani and Stern (eds.) *The Islamic City*, Bruno Cassirer Publisher Ltd, Oxford.
- SCHAFLITZEL, U. (1980): "The Renewal of an Islamic Medina", The international symposium on Islamic Architecture and Urbanism, January 5-10, 1980, Dammam, Saudi Arabia, *Ekstics*, Vol. 47, No. 280, pp.33-35.
- SCHMERTZ, M. F. (1980): "A Search for Meaning in the Architecture of Islam", *Architectural Record*, August, No. 8, pp.86-89.
- SCHOR, I. (1980): *Critical Teaching and Everyday life*, Boston, South End Press.
- SCRUTON, R. (1983): *The Aesthetic Understanding*, Manchester, Carcanet Press.
- SEN, G. (1988): "Space: Concept and Meaning", *Mimar* (27), March, pp.60-63.
- SENAN, Z. (1992): "Colonisation and Development of the Built Environment: the Case of the West-Bank, Palestine", *Forum*, Vol. 1, CARDO, University of Newcastle Upon Tyne, UK, pp.74-85.
- SERAGELDEN, I (1986): "Architecture and Society", in A. Evin. (ed.) *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, 1986, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp.75-87.
- SERAGELDEN, I (1989): "On Architectural Continuity", in *Space for Freedom: The Search for Architectural Excellence in Moslem Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, Boston, pp.241-246.
- SERAGELDEN, I (1989): "Contemporary Architectural Expression", in I. Seragelden (ed.) *Space for Freedom: The Search for Architectural Excellence in Moslem Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, Boston, pp.278-282.
- SERAGELDEN, I (1989): "Faith and Environment: An Inquiry into Islamic Principles and the Built Environment", in I. Seragelden (ed.) *Space for Freedom: The Search for Architectural Excellence in Moslem Societies*, The Aga Khan Award for Architecture, Butterworth Architecture, London, Boston, pp.213-225..
- SERJEANT, R.B. (1980): *The Islamic City*, UNESCO, Paris.
- SHALABY, T. (1984): "Behavioural Pattern and the Arab House", *The Arab House*, proceedings of the Colloquium held in the University of Newcastle upon Tyne 15/16 March, pp 73-82.
- SHOENAUER, N. (1981): *600 Years of Housing: The Pre-Urban House*, Vol.1, Garland STPM Press, New York & London.
- SHOENAUER, N. (1981): *600 Years of Housing: The Oriental Urban House*, Vol.2, Garland STPM Press, New York & London.
- SLATTERY, M. (1985): *Urban Sociology*, Lancashire, Causeway Books.
- SMITH, H. L. (1989): "Should Future Architects Practice as Generalists, Specialists, or Both?", *Architectural Record*, August, pp.39.
- SMITH, P.A. (1984): *Palestine and the Palestinians 1876- 1983*, Croom Helm, London.

- SMITH, R.A. (1989): *The Sense of Art; A Study in Aesthetic Education*, Routledge, New York, London.
- SNYDER, J.C. & CATANESE A.J. (1979): *Introduction to Architecture*, McGraw Hill Inc., New York.
- SOMMER, R. (1969): *Personal Space: The Behavioural Basis of Design*, Prentice- Hall Inc., New Jersey.
- STEELE, J. (ed.) (1992): *Architecture for a Changing World*, The Aga Khan Award for Architecture, Academy Editions, Great Britain.
- STRINGER, P. (1975): "The Myth of Architectural Creativity" , *Architectural Design*, October, pp.63.
- SUPIC, P.(1982): "Vernacular Architecture: A Lesson of the Past for the Future", *Energy and Buildings*, No.5, pp.43-54.
- SYMES, M., MARMOT, A.(1983): "Introducing the Architectural Case Problem", *Architectural Education*, No.3, pp. 99-107.
- TALIB, K. (1984): *Shelter in the Saudi Arabia*, Academy Editions/ St. Martins Press, Britain.
- TAMARIS, S. (1994): "Transformation of Palestinian Society: Fragmentation and Occupation" (Arabic trans.), in *Palestinian Society in Gaza, West Bank and the Arab Jerusalem: A Survey of Living Conditions*, Institution of Palestinian Studies, Beirut.
- TAYLOR, B.B. (1986): "Perspectives and Limits on Regionalism and Architectural Identity", *Mimar*, No.19, January-March, pp.19-20.
- TAYLOR, L (ed.) (1982): *Housing: Symbol, Structure, Site*, Rizzoli, New York.
- TEKELI, I.(1986): "Architecture and society", in *Architectural Education in the Islamic World*, Proceedings of Seminar Ten in the Series Architectural Transformation in the Islamic World Held in Granada, Spain, April 21-25, 1986, The Aga Khan Award for Architecture, Concept Media Ltd. Singapore, pp. 65-87.
- TEMPLER, J.(1990): "Architectural Research", *JAE*, 45(1), pp. 3-10.
- TEYMUR, N. (1983): "Architectural Education in a Divided World", *Architectural Education*, No.2, pp. 84-93.
- THIIS-EVENSEN, T. (1987): *Archetype in Architecture*, Norwegian University Press, Oslo.
- THISTLEWOOD, D. (ed) (1989): *Critical Studies in Art and Design Education*, Longman, U K.
- TOMLAN, M. (1994): "Historic Preservation Education: Alongside Architecture in Academia", *JAE*, 47(4), pp.187-191.
- TOUQAN, S. (1995): *Urban Development Under Prolonged Military Occupation*, Unpublished Ph.D. Thesis, University of London, London.
- TOUQAN, S. (1997): "Options for Urban Development in Palestine", in A.B. Zahlan. (ed.), *The reconstruction of Palestine: Urban and Rural Development*, Kegan Paul International, London, New York, pp. 471- 487.
- TURNER, J. F. C.(1983): "Architects for Another Development", *Architectural Education*, No.2, pp. 58- 62.
- UDDIN KHAN, H.(1991): "Houses: A Synthesis of Tradition and Modernity", *Mimar* No.39, vol. 11, June , pp. 26-33.
- UDDIN KHAN, H.(1992): "Editor's Note" , *Mimar*, No. 43, Vol. 12, June , pp. 5.

- UGLAND, O., TAMARI, S. (1994): "Manifestations of Social Stratification" (Arabic trans.), in *Palestinian Society in Gaza, West Bank and the Arab Jerusalem: A Survey of Living Conditions*, Institution of Palestinian Studies, Beirut.
- UNESCO (1983), declaration in Mexico: " Politics of Culture: from theory to practice, *UNESCO No. 33*.
- VAZIRITABAR, S. (1990): *Design and Privacy in Modern and Traditional Housing in Iran*, Unpublished Ph.D. Thesis, Oxford Polytechnic.
- VENTURI, R. (1977): *Complexity and Contradiction in Architecture*, The Architectural Press Ltd., London.
- VITRUVIUS (1914): *The Ten Books on Architecture* (trans. Morgan. M.H.), Dover Publications, New York.
- VON GRUNEBAUM, G. (1962): *Modern Islam; The Search for Cultural Identity*, Berkeley, University of California Press.
- WARD, A (1991): "Biculturalism and Community: A Transformative Model for Design Education", *JAE*, 44(2), pp. 40-109.
- WHITFORD, F.(1984): *Bauhaus* , Thames and Hudson, London.
- WILKINSON, C. (1977): " The New Professionalism in the Renaissance", in S. Kostof (ed.), *The Architect: Chapters in the History of the Profession*, Oxford University Press, New York.
- WILSON, M.A. (1989): *The Development of Architectural Concepts; A Comparative Study of Tow Schools of Architecture*, Unpublished Ph.D. Thesis, University of Surrey.
- WILSON, S. (1980): " Housing Appraisal Kit: A Question of Feed Back", *The Architect's Journal*, Vol. 172, No. 46, pp. 953-955.
- WORLD BANK (pub.) (1993): *Developing the Occupied Territories- An Investment in Peace , Vol. 1 Overview*, The World Bank, Washington.
- WORLD BANK (pub.) (1993) : *Emergency Assistance Program for the Occupied Territories*, The Word Bank , Washington D. C.
- YOUNGMAN, M.B. (1979): *Analysing Social and Educational Data*, Maidenhead, McGraw-Hill.
- YOUSOF, M.A. (1997): "Conservation of Cultural Heritage: A Community Approach", in A.B. Zahlan (ed.) *The reconstruction of Palestine: Urban and Rural Development*, Kegan Paul International, London, New York, pp.488-499.
- ZAHLAN, A.B. (ed.)(1997): *The reconstruction of Palestine: Urban and Rural Development*, Kegan Paul International, London, New York.
- ZAKARI, A.(1985): " A Comparative Demographic Study for Arab Residents before the Zionist Occupation in 1948 and After" (in Arabic), in *The Demographic characteristics of the Palestinian Society* ,The Arab Institute for training and statistical research, 1985, Al- Nidal press, Beirut.

